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March 1, 1948



# SELECTED

# ASGROW

# SEEDS

## Associated Seeds, Inc.

SAN ANTONIO • ROBSTOWN • LUBBOCK

TEXAS

# ASSOCIATED SEEDS

## INCORPORATED

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*Branch warehouses*

| Robstown | Weslaco | Lubbock |
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| *Phone 135* | *Phone 461* | *Phone 2-2764* |

*Breeding station and experimental grounds*

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SEEDS FOR FARM, RANCH & GARDEN

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*Breeders and growers of seeds since 1856*

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A

# DESCRIPTIVE CATALOGUE

OF

# FIELD, PASTURE GRASS

AND

# SOIL-IMPROVEMENT CROPS

(No. 2)

Asgrow

TEXGROW


Associated Seeds, Inc.

San Antonio 6

Lubbock Robstown Weslaco

Texas

# Foreword

WHEN the first edition of this catalog was issued three years ago, it met with such ready acceptance that before long the need for a new and enlarged edition became evident.

Due to the exigencies of the times it has not hitherto been possible to produce this, but we now present it with the hope that it may be of service to our friends and customers in Texas and in adjacent states.

In the meanwhile, our facilities for the production and processing of Asgrow and Texgrow field seeds have been considerably expanded. A new branch has been opened at Lubbock with a modern warehouse and all proper facilities. In San Antonio a new plant has been constructed, specially designed and equipped with the most modern machinery for the grading and handling of hybrid seed corn, for storage under controlled conditions of temperature and relative humidity, and for seed treatment. At Weslaco a new warehouse has been erected, also provided with the latest facilities for storage and treatment. These improvements are in line with our policy of taking every practicable step to provide seeds of high quality and reliability in our branded containers.

Here it may be mentioned that our field seeds are sold under two brand names: ASGROW and TEXGROW, the first being seed of our best standard, including seed from our own pedigreed stocks; the second being seed of high quality acquired from reliable growers.

A pedigree is a line of ancestry, and in the seed trade pedigreed seed is a stock with a known history. For our Asgrow pedigreed seeds we have not merely a known history: we have the records of their development or performance at our breeding station in Robstown and of the way in which they were handled and processed until ready for shipment. We also know how they have met the conditions of Southwest farming which, in the end, is the most searching test.

Texas Certified seed begins with Registered or Foundation seed approved by the State Department of Agriculture, whose inspectors visit at intervals the seed crop to check for isolation, off-types, disease, etc. Only if the inspectors' reports are satisfactory can the Blue Tag be attached to shipments.

Suggestions for the improvement or correction of this catalog will be welcomed.

ASSOCIATED SEEDS, INC.

March 1, 1948

# FIELD BEANS

### PINTO *Phaseolus vulgaris*

Deservedly a favorite in dry southwest regions both as a commercial crop and in home gardens for spring and fall planting. Principally used dry for soups or chili; to a smaller extent for green snap beans if picked young. Both dry beans and snaps have a distinct and popular flavor. A soil improvement crop.

Plant small to medium, of spreading bushy type, early, prolific and highly resistant to drought. Pods flat and medium light green when young, later becoming oval, broad and colored with brown streaks on cream background, 4″-5″ long, stringy and tough. Seeds about 5 per pod, large, broad oval, buff with tan to brown splotches, 85-90 per oz.

# BROOMCORN

*Sorghum vulgare* var. *technicum*

A specialized sorghum, grown for the use of the brush, or straw in the seedheads.

Said to have been introduced to America by Benjamin Franklin, who found some seeds in a brush imported from Europe. Our seed is produced by experienced growers in Illinois and Texas where the climatic and soil conditions are favorable to the development of superior grades of seed free from smut, weather damage, and the possibility of cross pollination with other sorghums.

Broomcorn is a warm weather plant, and the best brush is produced where the summers are hot and on loam soils well supplied with moisture which warm quickly in the spring. The dwarf varieties are more extensively grown in the South and Southwest, where the brush is pulled and the green stalk growth is utilized as grazing.

### BLACK SPANISH DWARF

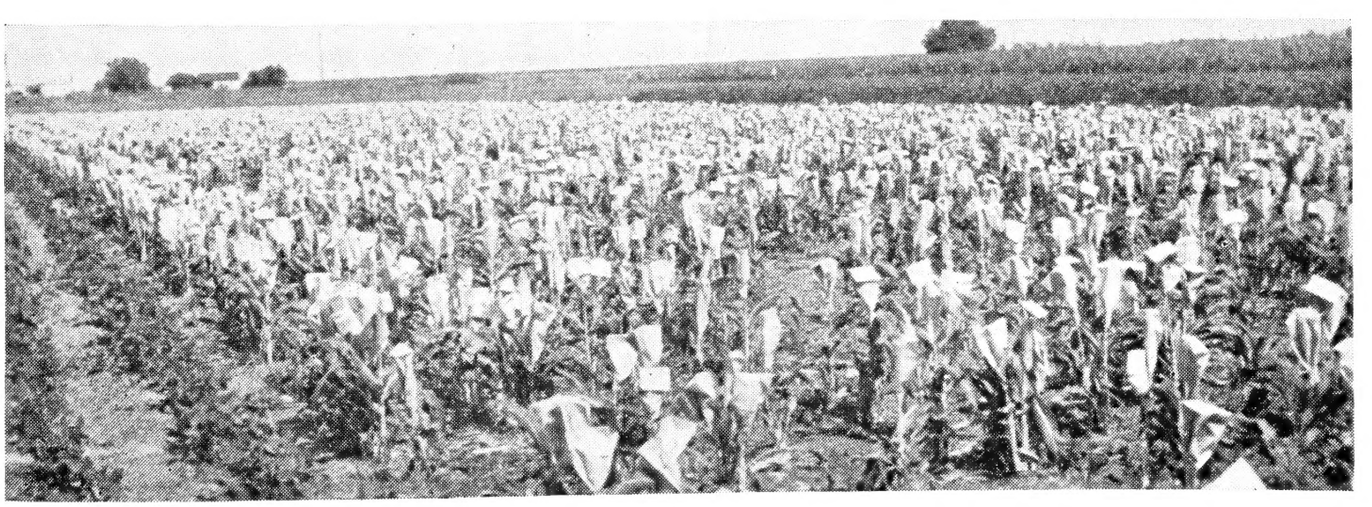
An early-maturing, drought-resistant variety; about 10 days earlier than Scarborough and very similar to it, but lower yielding. Adapted to irrigated soils of the Rio Grande Valley.

### EVERGREEN

An old-established, tall variety; chiefly grown in the more humid sections. Produces a fine green brush, free from coarse center stems and fairly uniform; matures later than Scarborough.

### SCARBOROUGH DWARF NO. 7

Introduced about 30 years ago and named for its originator, a farmer in Texas county, Oklahoma; now the most extensively grown and most popular of all the broomcorn varieties. Plants 5-6 feet tall; maturing in 100-110 days; brush long, weakly attached; branches 15-24 inches long, erect and flexible; seed enclosed in reddish brown hulls. A variety with few seeds; easy to cure and thresh. Yields a class of brush much in demand for finishing the outside of brooms.



Our plant-breeding station at Robstown, Texas

# CORN

*Zea mays*

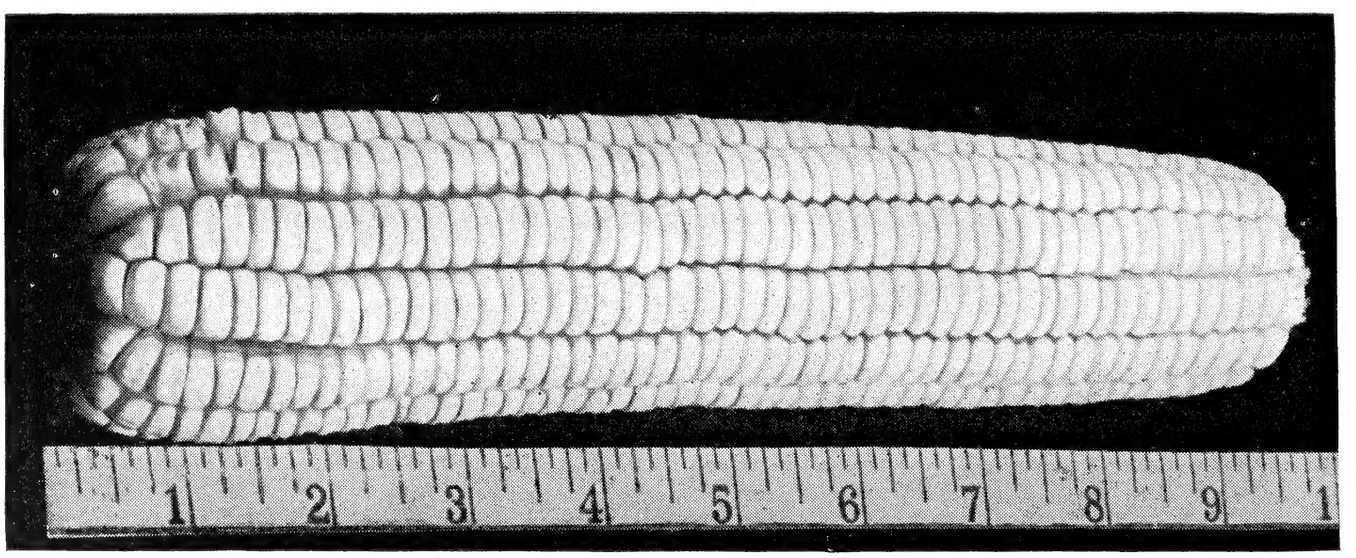
Until recent times, the development of corn varieties adapted to particular purposes and conditions of growth depended on natural mutation and selection by growers. Now, however, the new science of plant breeding has been applied to the building of hybrid varieties, with most satisfactory results in uniformity, yield, disease resistance, and adaptability to the soil and climate of definite areas, so that each season the proportion of hybrid corn is steadily increasing over that of the old open-pollinated types.

A hybrid is defined as the first generation of a cross between strains of different parentage and involving one or more inbred lines or their combinations. A *single cross* hybrid is made by crossing two inbred lines, and a *double cross* from the mating of two single cross parents. A *three-way cross* comes from an inbred and a single cross. A *top cross* has for parents an inbred and an open-pollinated variety; a *double top cross* has a single cross and an open-pollinated variety for parents. Of these five types the double cross hybrids are most generally used. The purpose of inbreeding, that is, the fertilization of plants with their own pollen, is to emphasize desired characters such as size, shape, uniformity, disease-resistance, etc., and to eliminate those that are undesirable. Continued inbreeding of a single group of plants requires a high degree of skill, patiently exercised for years and with the possibility that it may not lead to profitable results. The next step is crossing by means of controlled pollination, which must be conducted with equal care. The first generation seed of any hybrid gives the maximum benefits from hybridization. The next generation, however, is not satisfactory for seed, as the hybrids are unstable in reproduction and begin to break up into the original and diverse lines from which they were developed.

From the foregoing, three deductions follow naturally. (1) Hybrid seed must be procured anew each year, not saved. (2) It is bound to cost a little more, though it more than amply repays its cost. (3) It should be obtained only from a trustworthy and completely reliable source, since its value cannot be judged by its appearance.

The following list comprises, first, a comprehensive selection of the open-pollinated varieties which experience has shown to be best adapted to the needs of Texas and other Southwestern growers, followed by seven outstanding hybrids developed through a program of breeding, selecting and testing by the Texas Agricultural Experiment Station. Others are in course of production and will be announced when available. We confidently recommend them for trial by our customers, predicting increased yields and greater uniformity, easier harvesting, and improved quality of grain for milling and feed.

The number of days indicated for each variety represents the average over different areas and different years. These figures are naturally subject to variation and are primarily intended for purposes of comparison.




White June: the improved Asgrow strain

# OPEN-POLLINATED VARIETIES

### CHISHOLM REDCOB

An old variety, introduced to Texas in 1906 by A. M. Ferguson, valued for its milling qualities and also for feed. Stalks tall and strong; ears have 14-16 straight rows, with ample husk coverage; kernels white, not hard, long, rough dent; cob dark-red. For early planting only. 120 days

### DROUGHT RESISTER SURECROPPER

Similar to White Surecropper in ear and grain character. Grains mature completely on a relatively low amount of moisture. Adapted to early and late planting to escape drought; used to some extent for early roasting ears. A good milling corn with relatively high shellout percentage. 115 days

### MEXICAN JUNE

Introduced from Mexico, widely adapted throughout the South and Southwest for very early and late planting. More prolific and productive under dry atmospheric conditions than other open-pollinated varieties. Responds to irrigation. Plants strong, sturdy, slender, often showing bluish-green color; ears medium, 12-14 rowed with long, coarse, tight husk; kernels white, medium-sized, with a few purple; somewhat chalky to slightly hard. Often used as a catch crop after oats and other spring crops. 120 days

### OKLAHOMA WHITE WONDER

Very similar to Silvermine except that the kernels are a little broader and the ears slightly more tapering. Developed at the famous 101 Ranch in Oklahoma. One of the favorite roasting ear varieties grown in the Rio Grande Valley. 120 days

### SILVERMINE

A popular variety in the Rio Grande Valley often used for roasting ears and also for silage. Well adapted to river soils in Texas, responds to irrigation. Plants relatively tall, stalks somewhat slender but strong, sturdy and quite uniform, ears long and cylindrical, with tight fitting husks; kernels white, medium in size, tight set, slightly hard (vitreous), rough to dimple dent, in 16-18 straight rows; cob white, medium size. Shellout percentage high, and a good milling variety. 120 days

### STRAWBERRY

A very old, high-yielding feed corn best adapted to river and creek bottom land. So named because of variegated red and yellow grain color. Plants stout and sturdy; ears large; kernels soft, long, broad, with rough to wrinkled dent. 125 days

### WHITE JUNE

Our improved strain, introduced in 1942. Popular as a roasting ear variety for early and late planting, chiefly in the Rio Grande Valley. Possesses the drought-resistance of June corn and the milling qualities of the best Surecropper types. Plants medium, vigorous, strong, sturdy; ears slightly tapered, medium to large, with 12-14 straight rows, well filled at the ends, with 5-7 layers of coarse, thick, long husks, affording resistance to ear worm in roasting ear stage, and protection from weevils, bird damage and weather damage at maturity. Kernels white, thick, smooth to dimple dent, not hard, with large germ; cob white, medium sized. Holds well in roasting ear stage, and is of exceptionally good flavor. 115 days

### WHITE SURECROPPER

The most widely adapted variety for early and late planting in Texas and the Southwest. Originated and introduced in 1909 by A. M. Ferguson, pioneer Texas plant breeder and grower. More esteemed for its very excellent milling qualities than its average yields. Used also for roasting ears. Plants stout, strong, with vigorous root system, drought resistant; husk coverage ample for protection against weather, worm and weevil. Ears medium to large, 12-14 rowed; kernels large and of good depth, white, broad, flat, with large germ, hardness varies from slightly chalky to somewhat hard or vitreous, smooth to slightly rough dent; cob white, medium to large. 115 days

### WHITE THOMAS

A variety well-adapted to south Texas, at one time known as Bissett Corn. Not a heavy yielder but has very high shellout percentage. A good variety for milling and for feed; preferred by some for roasting ears. Plants tall, ears slender and slightly tapered, with good shuck coverage; grain in 16-18 straight rows; creamy white, tight set on cob, long, thin, somewhat hard, rough to wrinkle dent; cob very small, white. Not recommended for late planting. 130 days

### WHITE TUXPAN

A variety well adapted to the stiff clay soils of the coastal belt and to irrigated areas of the Rio Grande Valley, where it is grown for its good marketable roasting ears of fine flavor. Yields well and provides an abundance of silage. Plants very tall, vigorous, prolific and strong, with considerable resistance to wind and storm; stalks thick, bearing 1-3 medium to large ears, slightly tapered, with 14-18 straight rows, husks long, coarse, tight fitting. Kernels white, medium sized, somewhat flinty, slightly dented; cob white, medium sized. Shellout percentage high. 140 days

### YELLOW DENT, Ferguson type

The standard Dent for Texas and the Southwest; originated and introduced in 1907 by A. M. Ferguson. Widely adapted; yields are consistently good, with high shellout percentage. Highly esteemed for its feeding qualities. Best adapted on bottom land and rich upland. There are many locally adapted varieties and strains of Yellow Dent, but none so outstanding and widely adapted as the Ferguson type. 125 days

### YELLOW SURECROPPER

A desirable drought resistant variety for ground feed developed and introduced by Prof. P. C. Mangelsdorf, released about 1934. Similar to white Drought Resister Surecropper except that grain is yellow and somewhat flinty. Rows of kernels not straight on all ears. Occasionally grown for early roasting ears where local markets prefer yellow corn. 120 days

### YELLOW THOMAS

Similar to White Thomas except for the shallower and broader grain. Preferred by some for feeding purposes where adapted. 130 days

### YELLOW TUXPAN

Very similar to White Tuxpan except for the yellow grain. Excellent for feeding and silage. 140 days


**New and completely modern plant at San Antonio**

# HYBRID VARIETIES

*The following hybrids were developed by the Texas Agricultural Experiment Station, and have proven to be generally well adapted in the corn growing sections of the state.*

### TEXAS WHITE HYBRID NO. 9W

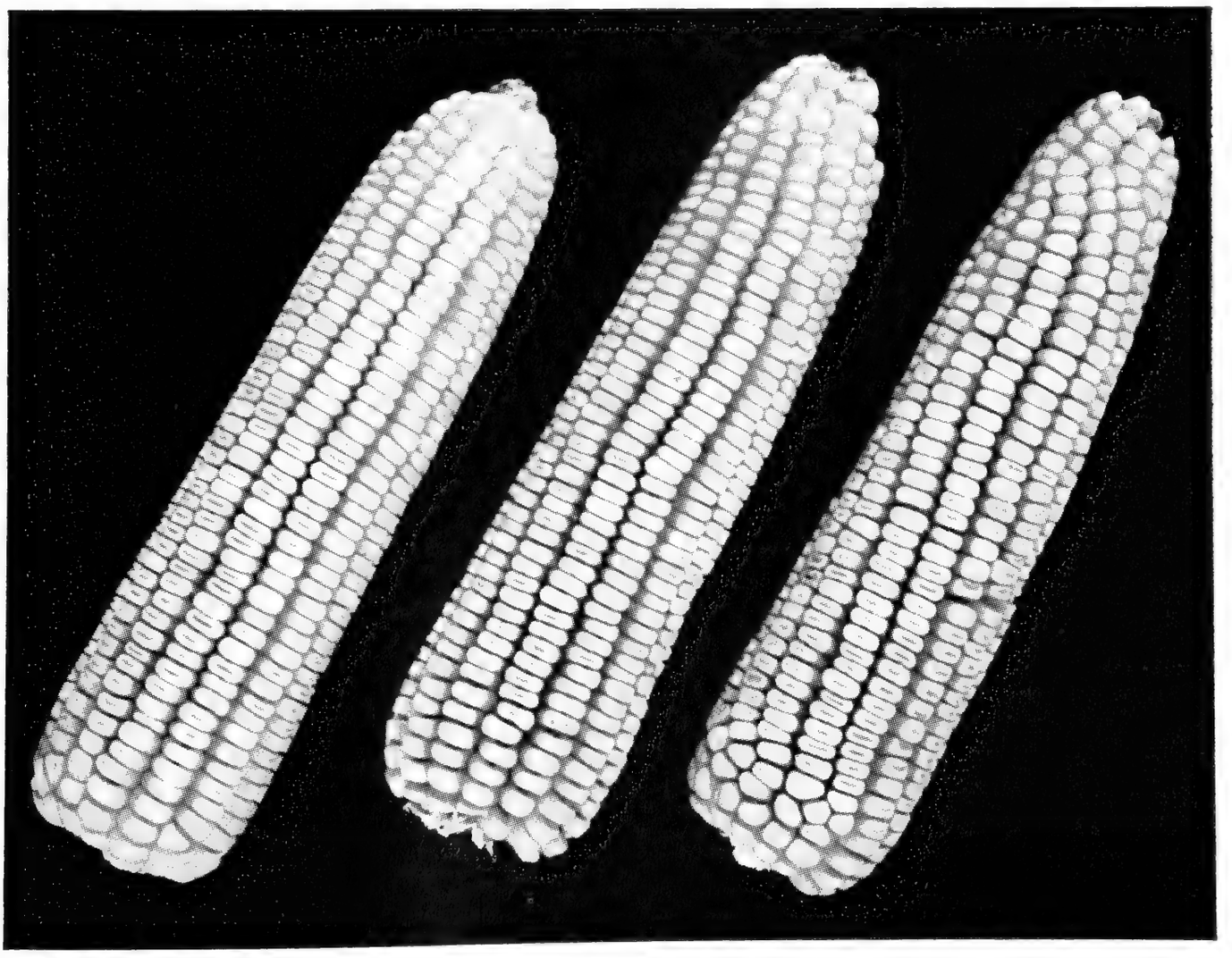
A new and improved development from No. 7, taking the latter's place in popularity. Early to mid-season prolific double cross hybrid with a considerable range of adaptation. It is an outstanding roasting ear variety. Ears of medium size, uniform in shape and grain characters, and with better than average husk coverage. Parentage: (102A x 155A) x (4R3 x 61M). 120 days

### TEXAS WHITE HYBRID NO. 13W

Developed at the Valley Station and released for 1948 planting. Combines the good qualities of White Tuxpan with the earliness and productive capacity of the single cross 4R3 x 61M. 125 days

### TEXAS YELLOW HYBRID NO. 8

A very early double top cross hybrid with Yellow Surecropper as the seed parent and a single cross hybrid (127C x 132A) as the pollen parent. Probably not so uniform in ear and grain character as the other hybrids in this series, but is quite drought-resistant and has a high shellout percentage. Ears medium, slightly tapered; kernels yellow to reddish, somewhat hard; cob medium. Not the highest yielding hybrid variety but is widely adapted. 118 days



Texas Yellow Hybrid No. 8

### TEXAS YELLOW HYBRID NO. 12

One of the most dependable and popular double cross hybrids yet developed in Texas. The seed parent is hybrid (KYS x K4) and the pollen parent (127C x 132A). It is noticeably uniform in ear and grain character and has proven better adapted to the good corn soils in the higher rainfall areas than elsewhere. Ears are medium long and cylindrical to slightly tapered; kernels of rich yellow color, hard, with dimple dent. 120 days

### TEXAS YELLOW HYBRID NO. 18

The seed parent is hybrid (173D x 203) and the pollen parent (127C x 132A). This is the first all Texas yellow double cross so far developed, with all inbreds used in the hybrid originating from native yellow dent varieties. This hybrid produces rather large, slightly tapering ears, with large, soft, deep yellow kernels. The stalk is stout and strong, but the plants may root lodge under heavy winds. Results so far indicate this hybrid may be expected to give yields similar to those of No. 12. 120 days

### TEXAS YELLOW HYBRID NO. 20

A double cross hybrid released in 1946. Similar to No. 18, but more widely adapted. Parentage: (KYS x 203) x (127C x 132A). This hybrid has a stiff stalk and the leaves are not so brittle as those of No. 18. The long slender ear has a tight shuck which covers the tip well. Grain fairly large, soft, and bright yellow. Yield compares well with that of Hybrids No. 12 and No. 18. 120 days

### TEXAS YELLOW HYBRID NO. 22

A tight shucked, worm and weevil resistant yellow field corn adapted to the irrigated portions of the lower Rio Grande valley and the high rainfall areas along the Gulf Coast. Combines the good qualities of Yellow Tuxpan (derived from the two semi-tropical varieties White Tuxpan and Cuban Yellow Flint) with the single cross hybrid KYS x K4. It is a weather and pest-resistant variety, capable of producing 100 bushels per acre under favorable conditions. 120 days

## POP CORN

*Zea mays var. everta*

There are three types of pop corn, distinguished by kernel shape: Pearl, with broad smooth kernels and heavy cob chaff (flower glumes) on tips; Hulless, with shoepeg kernels and very light chaff; and Rice, with pointed kernels and rather heavy chaff.

### GIANT YELLOW (South American Giant: T.N.T.)

A popular late variety, plants 7½ feet tall; ears large, 7 inches, 12-16 rowed. The golden yellow kernels of pearl type are large and creamy white when popped. 100 days

### GOLDEN QUEEN (Queen's Golden)

Tall (7 feet) vigorous plant with long, slim ears (7 inches) having 12-16 rows of smooth, yellow pearl-type kernels. 90 days

### HULLESS

Plant 5 feet; ears chunky (3½ inches) and without row formation; kernels white pointed, narrow, pop to large snowy white. 85 days

### WHITE RICE

An old standard early variety. Ears 6 inches, kernels pointed, of translucent appearance; white when popped. 90 days

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### HYBRID POP CORN

New hybrids of considerable promise for increased vigor, uniformity and yield have recently been introduced or are in process of development. Particulars of those available may be obtained from any of our offices.

# GRASSES

## NATIVE AND INTRODUCED SPECIES FOR RANGE, PASTURE AND TURF

Grasses form the most important family of plants, including cereals, bamboos, a host of pasture, forage, hay and silage plants; sugarcane and numerous ornamentals; dye, drug and fiber species. Their significance is not confined to agriculture but extends into horticulture, forestry, range management, soil conservation, wildlife management and other fields. The value of hundreds of grass species yet remains to be explored, a prodigious but necessary task, considering their potential value.

Of the approximately 550 native species of grasses growing in Texas, only a relatively small number have been found desirable for grassland agriculture. For the past 10 years, experimental work has been carried on to find the best species and strains for range and pasture seeding. We have assisted State and Federal agencies in this work and have endeavored to bring seed of the desirable plants, as listed hereunder, to the rancher and farmer.

These grasses have proved their efficiency in controlling wind and water erosion, improving soil structure, providing wildlife food and cover; and increasing the carrying capacity and lengthening the grazing period of ranges and pastures.

In Texas alone there are millions of acres of formerly excellent range land now so depleted that they must be reseeded to return them to their former state of usefulness. This can best be done by using proven species adapted to the different soil types, altitudes, rainfall areas, temperature variations, and general climatic conditions.

Overgrazing or other misuse of range lands has caused great areas to be invaded by brush and other weedy plants. Millions of dollars have been spent on brush eradication but it cannot be permanently controlled except by the competition of other plants, particularly the hardy perennial grasses. Such undesirable weeds as bitter weed, broomweed and western ragweed in pasture and range lands can only be controlled successfully by using competitive grasses.

In grassland farming, species must be used which are aggressive, deep-rooted, resistant to drought and erosion, and productive of good seed and a maximum amount of nutritious, palatable forage. Yet these grasses should be easily and quickly eradicable so that the farmer can by plowing return his land to cultivated crops. Many of the grasses listed below, especially the deep-rooted perennial bunch grasses, are adapted to grassland farming.

As new grasses are found that fit into the agricultural economy of the Southwest, Associated Seeds, Inc. will make them available to the user.

### ALTA FESCUE *Festuca elatior* var. *arundinacea*

A deep-rooted, tufted, long-lived perennial grass having numerous dark green basal leaves which are broader and coarser than meadow fescue. It has comparatively few seed stalks, heads branched, and seeds are borne three to five in a spikelet. Adapted to a wide range of soil and moisture conditions but best on fertile, moist, rather heavy soils.

### ANGLETON *Andropogon annularis*

A perennial bunch grass introduced from India about twenty years ago. Similar to other bluestem grasses but distinguished from them by a hairy ring at each node. A light seeder, believed for a long time to produce no seed. May be propagated by runners or seed. Adapted to a wide variety of soils and is drought-resistant.

**BAHIA** *Paspalum notatum*

A creeping perennial, turf-forming pasture grass, best adapted to poorly drained, low lime-content soils along the coastal region from Texas to Florida. Almost an evergreen, and withstands heavy grazing and trampling. Plants 6-12 inches high, spreading by coarse short rootstocks to form a very dense sod. Sends up a succession of new leafy shoots of light green color.

**BERMUDA** *Cynodon dactylon*

Without a doubt the most dependable turf-forming grass yet to become acclimated to southern soils and climate. Shows preference for fertile, moist, clay-loam soils; but grows on any soil when supplied with relatively abundant moisture. Bermuda grass is utilized for diverse purposes. It is the foundation grass for southern lawns and golf courses, yet no other grass is used so extensively and is so well adapted for southern pastures or erosion control. Used also for highway maintenance, airports, army bases, and to hold embankments and levees. Seeds well in dry climates of Arizona under irrigation, whence comes the bulk of the seed grown for planting purposes. The plants form dense turf 3-8 inches deep; spreading by means of seeds, underground root stocks and surface rooting stems or stolons; very leafy; somewhat drought-resistant. The seeds are very small, and most rapid germination is from hulled seed. Good in mixtures with other lawn and pasture grasses and clovers such as Dallis grass, Carpet grass, Rescue grass, Common Ryegrass, White Dutch clover, Bur-clover, Black Medic, Lespedeza, Hop clover and Persian clover.

Bermuda is the leading lawn grass in the South

BIG BLUESTEM *Andropogon furcatus*

A native perennial bunch grass valuable for spring, summer and early fall pasture. Like corn and sorghum, it prefers rich, fertile, well-drained soil within the 30–40 inch rain belt. The deep penetrating root system adds organic matter to the subsoil and prevents erosion. Responds well to cultivation. The plants spread by short rootstocks to form luxuriant, dense, leafy growth 1-2 ft. high. Stems many, tall (3-6 ft.) not woody but brittle at maturity, terminated by forked seed stems 2-3 inches long. Taller and ranker growing than Little Bluestem, with wider leaves and higher moisture content.

BLACK GRAMA *Bouteloua eriopoda*

Black Grama is a perennial grass distributed more or less generally through southern New Mexico, Arizona, and western Texas. Grows in bunches and spreads by tillers and stolons which adapts it for use in control of soil erosion.

Thrives on sandy to sandy loam soils but not adapted to heavy soils. Palatability is good and stands up well under dry conditions. Used for grazing and soil erosion control.

BLUE GRAMA *Bouteloua gracilis*

The most valuable perennial grazing grass on the western range. Furnishes grazing in the spring and fall and early winter. Cattle fatten on it with very little additional feed. It controls water and wind erosion. Best adapted on the brown, fertile soils of west Texas and the higher altitudes in the Southwest and Mexico. Plants with numerous narrow leaf blades, seed stems slender, upright, 1-2 feet above the turf. On flat land under grazing forms dense solid turf; but a more bunchy habit of growth on hill land. Identified by the seed spikes, which have the appearance of small brushes attached banner-like to the uppermost part of the stems.

Blue Panicum: a perennial for the Southwest

### BLUE PANICUM *Panicum antidotale*

A deep-rooted, perennial bunch grass that forms good sized, tough crowns by means of thick, short, bulbous rhizomes. It may reach a height of six feet under best growing conditions. The lower half of the stem has large nodes and bony internodes. Branching from the lower nodes is common if the main stem is cut off. The panicles are terminal on the stems and branches.

A sweet grass used for hay and pasture in south and southwest Texas. High in protein content. Prefers heavy loam soils of high fertility and needs irrigation if annual rainfall is under 25 inches.

**A 2-year old plant of Boer Lovegrass 6 weeks after seed harvest**

### BOER LOVEGRASS *Eragrostis chloromelas*

Boer Lovegrass is a long-lived, perennial bunch grass. It makes rapid growth, starts stooling early, forms dense clumps.

The basal leaves are rather long (24" to 36") narrow, slightly rough to the touch, flexible, and bluish in color. If not too cold the lower part of the leaves remains green and non-dormant over winter. Seed stalks are distinctly erect, stout and normally about 3 to 3½ feet tall. Seed heads are medium size (8" to 10" long), open, pyramidal in shape, and stiffly erect. Seed similar in shape and color to Weeping Lovegrass.

Boer Lovegrass is more drought-resistant than Weeping or Lehmann's Lovegrass but less winter hardy than Weeping Love. Well adapted to the dry Southwest. Thrives best on the more fertile soils but will do well on a wide variety of soils.

Has a long growing season and is readily consumed by all livestock. Food value compares favorably with other grasses.

### BUFFALO *Buchloe dactyloides*

One of the most nutritious and fattening grasses for pasture and range from Texas north to Canada, readily grazed by all classes of livestock from late spring to late winter. Grows best on tight clay and clay loam soils. Turf thick and perennial; plants spreading by means of many surface runners radiating in all directions; leaves fine and abundant. Becomes dormant during drought and in winter. Grows with Bermuda in drier soils, where it is also valuable as a lawn grass. Seeds are borne in small burs on short seed stems among the leaves. While most nutritious in the cool moist to cool dry periods of spring and fall, it cures on the ground and retains some of its feed value during periods of drought and in winter.

### CANADA WILD-RYE *Elymus canadensis*

Canada Wild-rye grass is a perennial, cool season bunch grass, native to all of Oklahoma and most of Texas and Arkansas. The bunches seldom attain any size and under many conditions are small and open. Well adapted to sandy soils throughout its entire southern range, but also thrives in heavy soils where rainfall is above thirty inches. Used chiefly for winter and early spring grazing. May be planted in early fall or very early spring.

### CARPET *Axonopus compressus*

A perennial mat-forming grass well adapted to the humid regions of the high rainfall belt in coastal prairie pastures and the pine timber soils. While not considered so palatable and nutritious as some other grasses, it is a valuable foundation pasture grass in those areas. Bermuda grass, Lespedeza, and White Dutch clover are good in mixture with Carpet grass which flourishes through most of the year and is grazed by stock even when it has been browned by frost. Easily eradicated by one plowing.

Carpet grass, as its name indicates, is also used for lawns, but should not be confused with the shade-tolerant St. Augustine grass, *Stenotaphrum secundatum*, frequently, but inaccurately, called Carpet grass.

### COMMON (Italian) RYEGRASS *Lolium multiflorum*

Often referred to as "winter grass" or "winter green". Widely adapted throughout the South for green lawns during fall, winter and spring, also used for pasture on permanent sod, or temporary pasture with oats and bur clover, and for winter soil-erosion control. Prefers rich soils and cool, moist weather. Not drought-resistant but somewhat winter hardy. Revives quickly and rapidly after close clipping and heavy grazing. Plants very leafy and spreading when spaced, but forming a soft, deep and dense dark green carpet when planted in thick stands. Where seasonal conditions are favorable, will yield an excellent quality hay, with or without mixtures of legumes.

### CRESTED WHEATGRASS *Agropyron cristatum*

Crested Wheatgrass is a hardy long-lived perennial bunch grass. Because of its deep root system (5-6 ft.) it is very drought-resistant and withstands cold weather well. Commonly used in permanent pastures and does well on a wide range of soils from clay to sand. Makes an early spring growth that is relished by all livestock.

### CURLY MESQUITE *Hilaria belangeri*

Curly Mesquite is a range grass found in southern Arizona, New Mexico, and Texas. Often confused with Buffalo grass, with which it is frequently associated and which it resembles. It is a perennial that grows in loose tufts or clumps and reproduces by seed and slender stolons. The plants are indeterminate in growth, resistant to drought, adapted to erosion control and will stand heavy grazing. Grows best on heavy clay soils, but will do well on lighter soils.

**DALLIS** *Paspalum dilatatum*

An important perennial pasture grass in the South, native to South America, introduced nearly a century ago and named for A. T. Dallis, who grew it extensively in Georgia. Well adapted to the moist, fertile, delta and bottom soils or hill lands derived from limestone formations. Very popular in Texas and the Southwest because of its long growing period and its succulent, rich foliage which furnishes abundant grazing and fair quality hay which, however, is not always easy to harvest, because of the tendency of the plants to lodge. Usually grown in combination and succeeds well with Bermuda, Carpet grass, Rescue grass and White Dutch or Persian Clovers, affording rich and palatable pasturage to dairy herds and livestock generally. Vegetative growth is rank, foliage is very dark green and maintains a dense turf even under heavy grazing. Seed stems erect when not grazed. There are many native Paspalum grasses but none equal to Dallis in grazing and hay value.

**Dallis grass: for perennial pastures on good soil**

**GALLETA** *Hilaria Jamesii*

Galleta grass grows most abundantly in the western half of the Texas Panhandle, westward through Colorado, New Mexico, the northern half of Arizona and Nevada into California. A perennial, producing an abundance of strong creeping underground rootstocks; tends to grow in tufts. Is resistant to heavy grazing and recovers rapidly when given protection from overgrazing; palatability good.

**HAIRY GRAMA** *Bouteloua hirsuta*

Hairy Grama is a perennial grass native to most of the central and Rocky Mountain states. It tends to form sod in the north but assumes a bunch habit in the south. It is adapted to the same general soil and climatic conditions as Blue Grama except that it will grow at lower altitudes. It can be distinguished from Blue Grama by the coarse black hairs on the back of the spike.

**HARDING** *Phalaris tuberosa* var. *stenoptera*

Harding grass is a perennial which is characterized by its manner of growing in large dense leafy tufts. It is quite difficult to establish, but when accomplished is very persistent. A winter-growing grass making seed in May and then dormant until the following winter. At maturity is rather coarse, but greatly relished by all livestock. Makes its best growth on deep, heavy soils and is valued for its ability to produce a green feed during the colder months when most plants are dormant.

INDIAN *Sorghastrum nutans*

Indian grass is a tall perennial bunch grass with short rhizomes. Used chiefly in mixtures with other grasses for the production of native hay or for grazing in sandy land pastures. Generally found throughout the Western Gulf Region in meadows and low lands along streams and occasionally in many of the sandy and clayey upland ranges. May be drilled, broadcast, or planted in rows.

JOHNSON *Sorghum halepense*

Though regarded as a pest in cultivated fields of Texas and the other cotton states, this is a nutritious summer grazing grass, well adapted to clay soils in river bottoms and uplands where it gives protection and grazing on fields no longer wanted for cultivated crops. Yields a fair quality of hay. Often confused with Sudan grass but develops a long fleshy perennial rootstock. Becoming more popular in the northern states, where it grows as an annual.

KENTUCKY BLUEGRASS *Poa pratensis*

A winter-hardy, turf-forming grass best adapted to rich, sandy loam or limestone soils of cooler moist climates of the northern states, where it is one of the most important lawn, pasture, and meadow grasses. Plants spread by short rootstocks and reproduce by seeds. The stems and leaves are fine and numerous, forming a very dense, soft, even turf for lawns or golf courses. In Texas it requires special care for such purposes if allowed to remain through the long, hot summer, but is more often used for winter and spring growth.

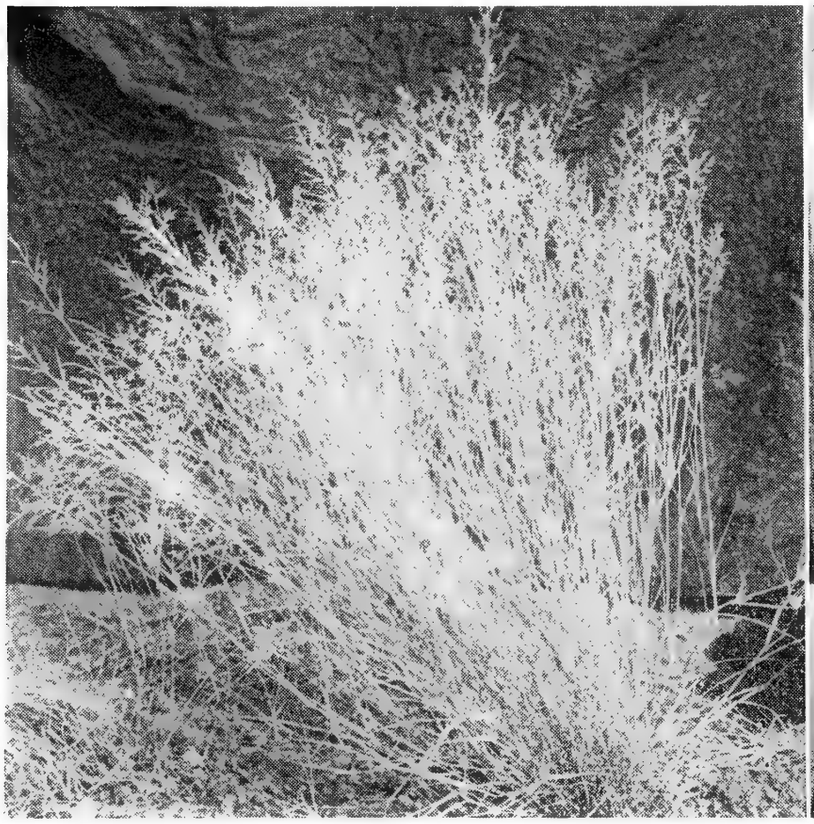
USDA-SCS PHOTO

Harvesting a seed crop of Indian grass

### LEHMANN LOVEGRASS *Eragrostis lehmanniana*

Lehmann Lovegrass is a perennial grass, the stems are commonly prostrate and take root producing new plants at the nodes. Stems slender, smooth, flexible, 18 to 36 inches long, characterized by early and profuse branching. The leaves are short (3"-6"), dark green, smooth and narrow, tapering to a fine straight point.

Seed stalks numerous and average in height about two feet. Seed heads are small (3"–6") and open. Seed similar in shape and color to Weeping Lovegrass but about one fourth the size. More drought-resistant than Weeping Lovegrass but not so winter hardy. Well adapted to the southern United States in regions where the winter temperatures do not drop below approximately 15° Fahrenheit.



Lehmann Lovegrass, a single plant

USDA-SCS PHOTO

Little Bluestem

### LITTLE BLUESTEM (Prairie Beardgrass) *Andropogon scoparius*

A native perennial bunch grass, for early spring and late fall grazing. Well adapted to topsoils that are fertile but somewhat low in lime. The deep and wide spreading root system binds the soil and adds organic matter. Easy to start on oak-hickory, peanut, and lespedeza soils. By June plants have formed a dense bunch growth of narrow leaves of bluish-green color, 12-20 inches high. The seed stems (2-3½ ft.) then grow, reaching maturity between August and November. Suitable for planting with Rhodes grass on sandy peanut land for permanent pasture and erosion control.

### MEADOW FESCUE *Festuca elatior*

Meadow Fescue is a very succulent, bright green bunch grass. Grows very slowly at first producing its best growth the second year. Starts early in the spring and lasts into the winter months. Will withstand considerable moisture, but is not drought-resistant.

ORCHARD *Dactylis glomerata*

A perennial bunch grass producing an early spring and late fall growth. Chiefly a pasture grass, but produces a good quality hay on good land if cut in early bloom. Prefers well drained soils and moderate moisture. Will do well in the shade.

PERENNIAL (English) RYEGRASS *Lolium perenne*

A short-lived perennial sod-forming grass not so extensively grown as Common ryegrass but more in use to establish meadows and pastures quickly in mixtures with other perennial grasses on fertile soils in regions with long, cool, moist periods. Plants form dense turf somewhat coarser than Common ryegrass but very nutritious and palatable. Seldom endures more than one season under Southwestern conditions.

REDTOP *Agrostis alba*

A perennial turf-forming grass used chiefly in mixtures for lawns and golf courses. Adapted to wet or moist soils low in fertility and on acid lands for hay, its ability to thrive under such relatively unfavorable conditions constitutes the chief reason for the use of this rather unpalatable species in pasture and meadow mixtures. Plants spread by short rootstocks. Stems erect, very fine; leaves narrow and numerous. When clipped or grazed forms a fine, close turf. Popular in the higher altitudes of Mexico.

RESCUE *Bromus catharticus*

Probably native to the cotton states of North America. Grows best on rich, moist adobe and limestone soils during the cool, moist periods of the fall and spring months. All classes of livestock graze the nutritious leaves and stems, and fatten on the seed as the plants reach maturity. Plants annual, 1-3 ft. tall and winter-hardy. Stems numerous, spreading to erect; leaves abundant, with long leaf blades; seed heads tall, loose and open, but when heavily grazed, are small and short. Responds to irrigation and to application of fertilizer. Excellently adapted to growing with permanent pasture grasses such as Bermuda, Dallis, and Buffalo, furnishing grazing while the latter are dormant. Rescue grass combines well with Johnson grass in meadows, bottom lands, pecan orchards, and where alfalfa is used for grazing. Also a fine grass to grow with lespedeza and bur-clover.

RHODES *Chloris gayana*

First cultivated in South Africa by Cecil Rhodes and introduced by the U. S. Department of Agriculture in 1902. One of the most valuable permanent pasture, hay, and erosion-control grasses yet discovered for south Texas, the lower half of the Gulf coastal area and Florida climate and soils. Furnishes more green grazing over a longer period than any other perennial pasture grass in this area. Responds to irrigation. Endures the short periods of cold weather in south Texas but also withstands long periods of very hot weather. Plants 2-4 ft. tall with perennial spreading runners; stems numerous, very leafy, dark green, succulent, of high moisture content and very nutritious. The sod, though tough, is not difficult to plow out, and the soil is left improved for following crops in more than one season.

RIBBED PASPALUM *Paspalum malacophyllum*

Ribbed Paspalum grass was introduced to this country from South America. The plant is a medium large, olive green, or somewhat purplish, leafy perennial that grows in large clumps from short scaly rhizomes. Panicles with 10 to 45 racemes or branches. The fertile lemma of the seed has five prominent ribs.

Adapted to the first tier of states along the Gulf Coast; preferring well drained neutral or acid, sandy loam soils, but will grow in heavy alkaline clays. May be drilled, broadcast, or planted in rows.

ST. AUGUSTINE *Stenotaphrum secundatum*

An introduced grass, probably from some island of the Pacific, used chiefly for lawns from Dallas and Fort Worth southward. Coarser than Bermuda grass, but thrives in shade, is

green earlier in spring and later in winter, and holds its color in dry weather. Rarely makes seed and therefore is usually established by stolons or sod; spreads by creeping flat stems which root to form dense carpet-like turf. Sometimes, but incorrectly, called Carpet Grass; a name which belongs to a different grass used principally for pasture.

### SAND BLUESTEM *Andropogon hallii*

Sand Bluestem is a tall-growing perennial with a bunch habit, but develops strong creeping underground stems. Its heavy rootstock and extensive root system make it ideal as a soil binder in loose blow soil. Especially adapted to very sandy soils. Used for grazing and control of soil erosion.

**Rhodes grass**

### SAND DROPSEED *Sporobolus cryptandrus*

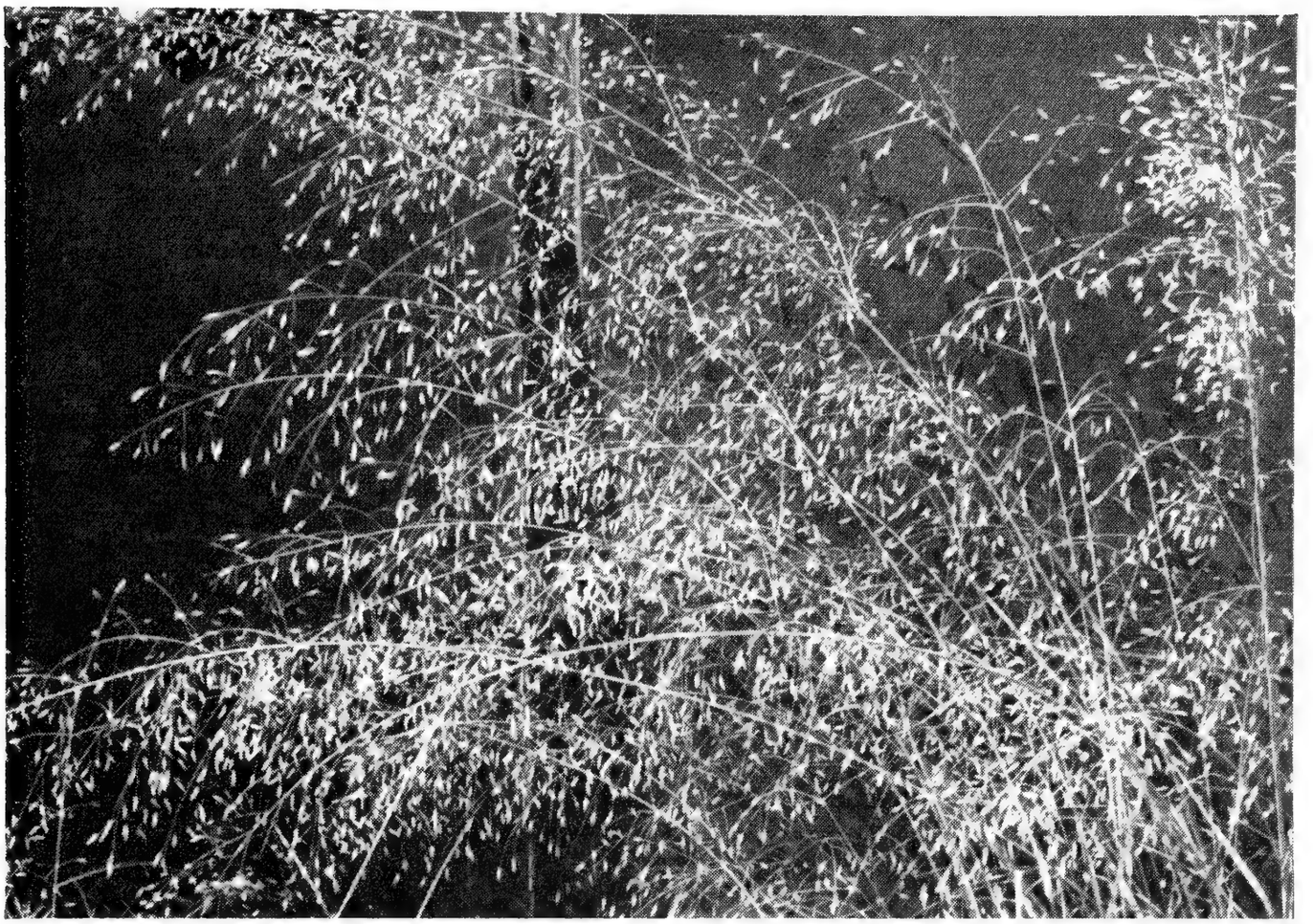
A good native range grass for erosion control and grazing, alone or with other permanent range and pasture grasses. Grows best on tight sandy soils and is widely adapted. Plants perennial, in very small tufted bunches, growing vigorously on limited amounts of moisture, not very leafy, but sending up numerous fine stems 12-18 inches tall. Seeds profusely. Furnishes winter and summer grazing. An inexpensive grass to use, the seed being very small.

### SAND LOVEGRASS *Eragrostis trichodes*

Sand Lovegrass is a tall, leafy, extremely palatable perennial bunch grass found generally throughout the sandier portions of the Western Gulf States. Best adapted to the light sandy soils in the 18 to 35 inch rainfall belt, but does well on heavier soils when introduced there. If over-grazed tends to seek the protection of woody plants. In pure or nearly pure stands produces a large amount of palatable forage early in the spring or fall.

### SIDEOATS GRAMA *Bouteloua curtipendula*

The most widely adapted permanent summer perennial pasture, range, and erosion-control grass found on limestone soils, with the longest grazing period of any range bunch grass. Low in moisture content but very nutritious and fattening, green or dry. Thrives best, like oats, on limestone, sandstone, and shale soils. Withstands drought well and furnishes grazing when dormant in winter. The fine fibrous root system holds



Seed heads of Sand Lovegrass

the soil and adds organic matter to the subsoil. Easy to establish, responds to cultivation; readily controlled, and adaptable for maintenance work on highways and soil binding. Often grown in mixtures with other range bunch grasses. Plants erect to spreading, and their numerous fine leafy shoots form a very dense turf. May be recognized by its very short, scaly underground rootstocks and numerous long, upright seed stems, 1½–3 ft. tall, with seeds borne in spiked clusters spaced at intervals along the upper part of the stems.

### SLENDER GRAMA *Bouteloua filiformis*

Slender Grama is a tufted, fine-stemmed perennial native to the southern two-thirds of the Rio Grande Plain, westward to Arizona. Thrives best in the heavier moderately alkaline clays and clay loams. Cannot be recommended north of latitude thirty-one degrees north as trials indicate it lacks cold hardiness. Shows considerable resistance to drought and is used chiefly for grazing and soil erosion control.

### SUDAN *Sorghum vulgare* var. *sudanense*

An annual, drought-resistant, quick growing and very nutritious sorghum for pasture and hay, introduced from Africa in 1909 by the U. S. Department of Agriculture. Sudan has now become the most valuable and widely distributed and adaptable of all the summer annual grass crops used for green grazing in the central and southern states. Grows well on almost any soil, except deep sand in high rainfall belts. May be planted several times during the long southern growing season to provide continuous green succulent growth. Readily grazed by all classes of livestock and ready to pasture in 4–6 weeks after planting when it has attained a height of 2–3 ft. Frequently used to plow under as a green manure crop. Finds a place as a soil-control crop to afford protection from wind and water erosion. Plants grow 5 to 6 ft. tall, erect, with numerous, fine, leafy, stems. Root system fine, fibrous, spreading.

Slender Grama: native to the Rio Grande plains

USDA-SCS PHOTO

Sideoats Grama

SWEET SUDAN *Sorghum vulgare*

A new and distinct grass sorghum developed by the Texas Agricultural Experiment Station through crossing Sudan grass and Leoti sorgo and repeatedly back-crossing to the Sudan grass parent. Sweet and juicy stalk, non-shattering seed habit, a distinct sienna colored seed and disease resistance have been transferred from the sorgo to the new grass sorghum through plant breeding. Resembling common Sudan in plant habit, Sweet Sudan is a little later in maturity, more vigorous growing and a higher yielder of both forage and seed. The plants are sweet and juicy, more resistant to foliage diseases and chinch bugs than common Sudan, and remain green and growing later in the summer and fall. Bright reddish seed hulls readily distinguish the variety from common Sudan, Johnson grass or other sorghum mixtures. Grazing tests have indicated that livestock prefer Sweet Sudan to common Sudan, the grazing period of the pasture is extended and the coarse stems are eaten readily.

SWITCH *Panicum virgatum*

A perennial, deeprooted, semi-bunch grass, occurring throughout the tall-grass and coastal prairies. Since it is ordinarily considered a "tall" grass it is best suited for hay either on alluvial soils or uplands and for pasture mixtures in the humid sections.

TALL FESCUE *Festuca elatior*

Similar to Meadow Fescue but is coarser, more drought-resistant, and more tolerant to alkali. Will not stand as much moisture as Meadow Fescue; otherwise the growth characteristics are similar.

VINE MESQUITE *Panicum obtusum*

A perennial grass that is tufted from a knotted rootstock. Its widely spreading stolons with swollen or knotted nodes often grow to eight or ten feet in length. Under favorable conditions forms a fairly dense turf. Occurs through Oklahoma and Texas west of the timber belt, to Arizona, southern Colorado and southern Kansas. Best adapted to heavy soils of flats, particularly overflow areas, but will grow on sandy soils. Most useful for erosion control and pasture, and in some sections is cut for hay.

Sweet Sudan: a valuable new grass sorghum

WEEPING LOVEGRASS *Eragrostis curvula*

Weeping Lovegrass is a long lived perennial bunch grass introduced from South Africa used for pastures, hay, and erosion control. Individual specimens develop into large dense clumps. Growth is rapid by means of several hundred closely packed culms forming on the crown. May spread by offsets forming at nodes on stems which will send out aerial roots to establish themselves as a new plant. The basal leaves are long, (24" to 48") slender, and drooping. Seed stalk 4 to 6 feet long, erect to spreading; flower heads drooping. Seed heads are large (8 to 12" long) carrying three hundred to more than one thousand seeds per head.

Weeping Lovegrass is adapted throughout the Southern part of the United States. Not as drought-resistant as Boer or Lehmann Lovegrass but is more cold-resistant. Does best on the better soils but will give good results on nearly any type of soil.

Eaten readily by all types of livestock either as green forage or hay. Food values correspond favorably with any of our native grasses. Being one of the first grasses to start growth in the spring and one of the last to lose its green color in the fall it gives a long grazing season.

WESTERN WHEATGRASS (Colorado Bluestem) *Agropyron Smithii*

A perennial bunch grass that grows early in the spring. Spreads rapidly by means of underground rootstocks and seeds abundantly. A good soil binder; palatability medium. Best adapted to heavy clay or clay loam and will tolerate considerable amounts of alkali.

YELLOW BLUESTEM KING RANCH STRAIN *Andropogon ischaemum*

King Ranch Yellow Bluestem was found in 1939 on the King Ranch at Kingsville, Texas. The species is native to India, where it grows from the higher altitudes to sea level; the 8–10 inch rainfall belt to the 100 inch rainfall belt and on a wide variety of soils. In the Southwest the King Ranch strain has been grown successfully from the Gulf Coast to northern Oklahoma, where in the winter of 1946–47 it withstood –20°F. It has been outstanding in reclaiming old fields, land from which brush has been cut, weedy range land

Weeping Lovegrass: three weeks growth following mowing

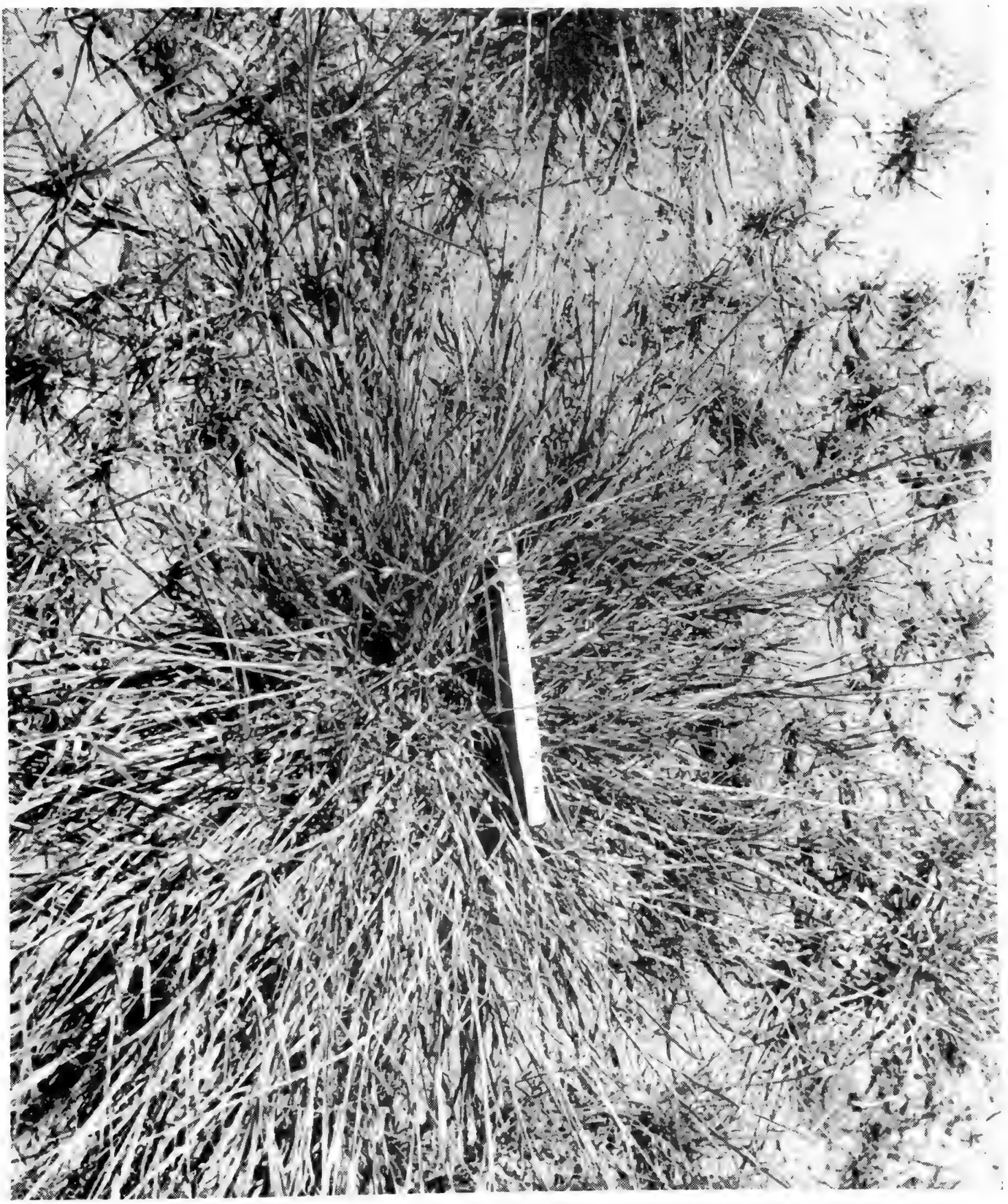
and areas made bare by wind and water erosion. It is a deep-rooted perennial, drought-resistant, mid-grass that forms semi-prostrate, erosion-resisting tufts; tending to spread and form pure stands, eliminating all competition; very palatable and highly nutritious, stands up well under grazing and produces hay of high quality.

To maintain themselves all range grasses must be allowed to seed periodically. Many of our good range grasses form seed only once a year. A drought, over-grazing or accidental burning may destroy this annual seed crop. In the Southwest, King Ranch Yellow Bluestem will seed over a good part of the late spring and early summer period and throughout the entire fall, and thus has more chance to reseed itself than a grass that sets seed only once a year. Since the seed of this grass germinates readily without covering (it should never be planted over ½ inch deep) it is very adaptable to reseeding range land where seed bed preparation is impossible. Spreading the seed over rough rocky range land in

Yellow Bluestem King Ranch strain: This field was planted on old weed-infested spinach land one year before the photograph was taken.

the Edwards Plateau following the eradication of brush has been highly successful. Excellent stands have been obtained in one growing season.

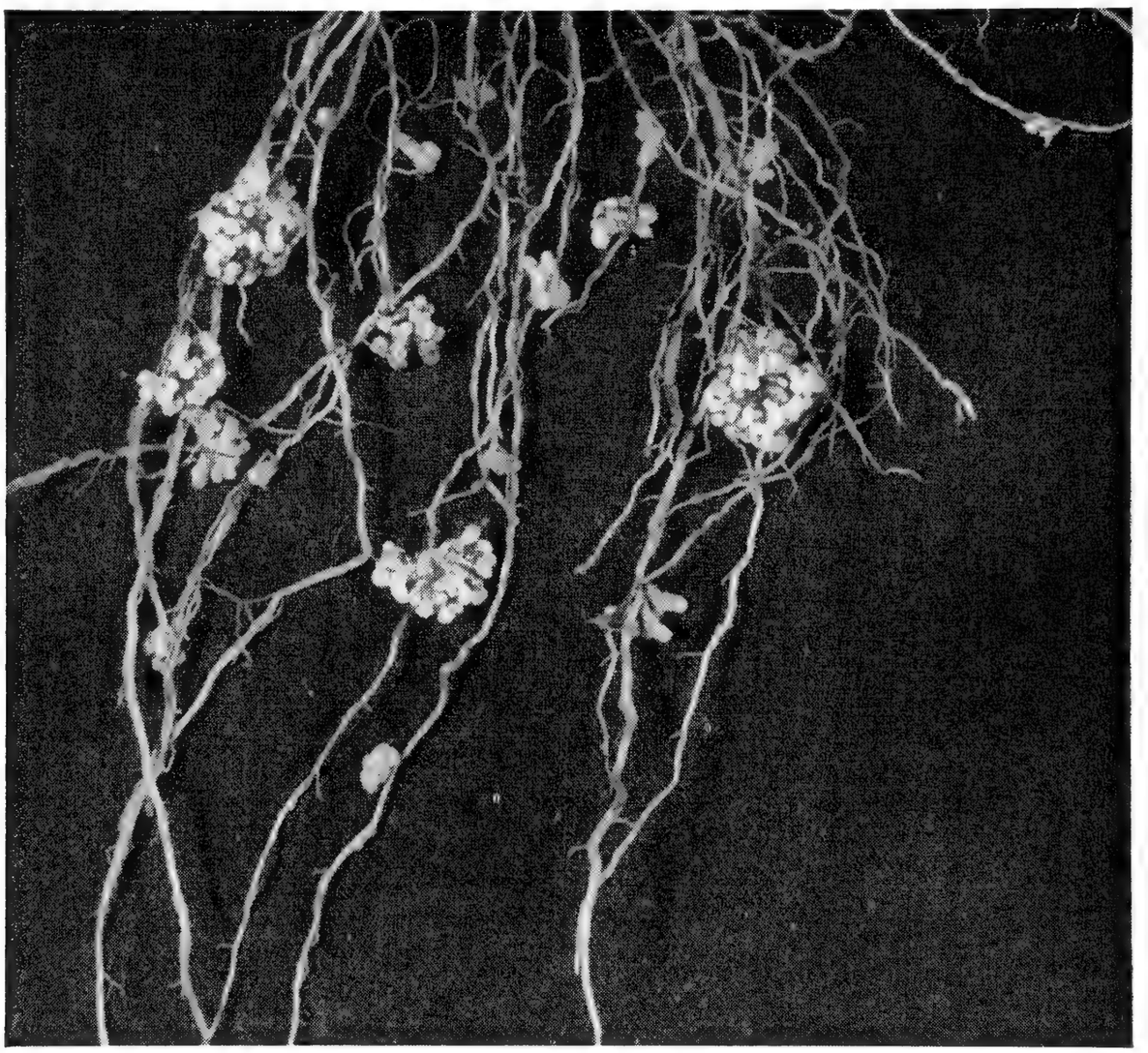
The King Ranch strain should not be confused with other strains of Yellow Bluestem; numerous trials have proved it more drought resistant and competitive, more palatable and more vigorous in growth. As a member of the great Bluestem genus it apparently will thrive anywhere that the native Big and Little Bluestems will grow. The K. R. strain grows equally well on acid or alkaline soils. It responds well to nitrogen and phosphate fertilizers. Its quick recovery following rain or irrigation makes it an excellent grass for an irrigated pasture or meadow.



King Ranch Yellow Bluestem: parent plant and seedlings

# LEGUMES

Legumes comprise a vast group of more than 7,000 species, among which are many extremely important crop plants such as peas and beans high in protein for food; soybeans of great value for food, feed, and industrial uses; alfalfa, clovers, lespedeza, and vetches which provide high protein forage and hay. The majority of the native species and the cultivated forms are characterized by the pea-type flower, the pod fruit, and the nodule-bearing soil-improving roots. The penetrating power of the roots enables them to improve the soil texture, and the bacteria which live in the nodules fix the free nitrogen of the air into available plant food. When these bacteria are not naturally present, the correct culture for a given legume may be easily and inexpensively mixed with the seed before sowing.



The nodules on legume roots are caused by nitrogen-fixing bacteria.

## ALFALFA

*Medicago sativa*

Alfalfa is a perennial legume but not a clover, and for almost any climate there is an adapted variety. It prefers fertile, well-drained, rich, deep limestone soils; neutral to slightly alkaline, and well fitted. To establish alfalfa, a firm, moist, subsoil is very important, with the first two inches of the surface soil loose and of open structure, free from debris to permit soil and seed to be firmly pressed together with a roller or a float after sowing.

Alfalfa ranks first as a high grade hay crop, furnishing high protein feed with very excellent keeping qualities. The somewhat bushy leafy growth and soft, pithy stems make it easy to cure without waste. A valuable grazing crop for all classes of livestock, though care must be exercised in grazing cattle and sheep on it to prevent bloat.

As a soil builder, alfalfa leaves the soil porous and well supplied with organic matter to a great depth beneficial to succeeding crops for several years afterwards.

No field or forage crop calls for more care in the purchase of seed than does alfalfa, since it is not possible to distinguish between varieties and strains by the appearance of the seed, therefore only seed of known origin and variety, with high germination and purity should be used. Sound, well matured seeds are plump and of bright, olive-green color.

### COMMON (Chilean)

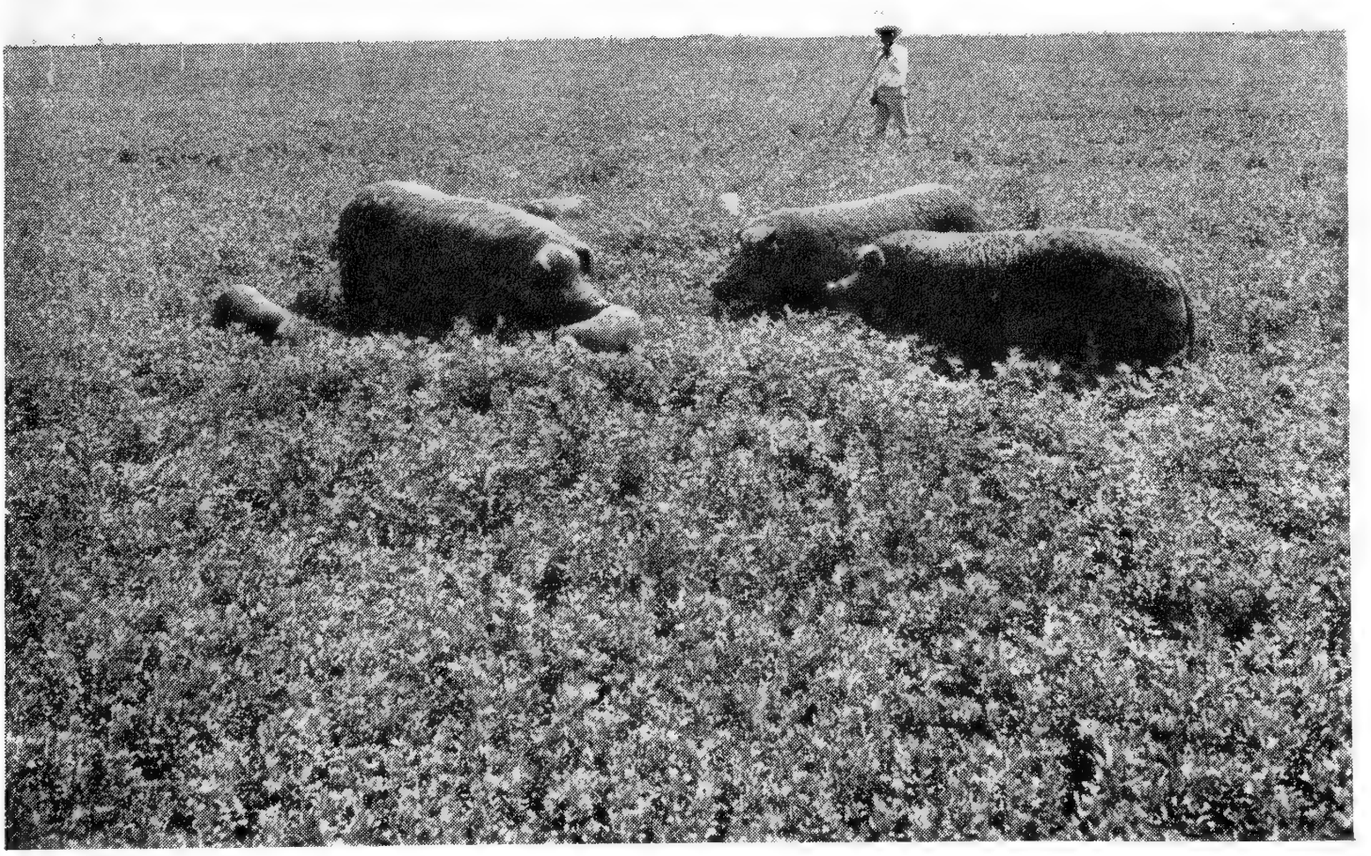
Introduced from Chile to California about 1850. Probably more widely grown and better adapted in Texas than other varieties. Plants erect, 1-3 ft. high, with many branched fine, leafy stems. It may be cut from three to five times during the year, yielding high quality hay, and may be used for pasture. Common Ryegrass and Rescue Grass are frequently sown with it to extend the grazing period and reduce the danger from bloat to cattle and sheep when the alfalfa is young and tender.

### HAIRY PERUVIAN

Introduced from Peru in 1899. Not so winter-hardy as other varieties, but very drought-resistant and adapted to the long season areas of the South and Mexico. While it may not produce quite such good quality hay as Common, it may be cut more often and recovers rapidly. Plants 1-3 ft. tall, very vigorous, leafy, branching profusely; stems somewhat coarse. The stems and leaves are covered with very fine short hairs which give the variety its grayish appearance.

### SOUTHWEST COMMON

An improved high-yielding variety. While not so winter-hardy as northern varieties, has proven quite adaptable to the variable climatic conditions in the central to northern sections of the cotton belt. Has been grown for many years in Oklahoma and Wilbarger County, Texas.



A rich alfalfa pasture

# PLANTING TABLE FOR SAN ANTONIO AREA

| NAME OF CROP | TIME TO SOW | Pounds of Seed Required Per Acre | | Depth to Plant | Number of Pounds Per Bushel | Approx. Number of Seeds Per Pound |
|---|---|---|---|---|---|---|
| | | Rows | Broadcast | Inches | | |
| *BEANS* | | | | | | |
| Pinto | Feb.-May; July-Aug. | 20–30 | ..... | 2 | 60 | |
| *BROOMCORN* | Mar.-June | 3–5 | ..... | 2 | 48 | |
| *CORN* | | | | | | |
| Field | Feb.-May | 6–10 | ..... | 2–4 | 56 | |
| Popcorn | Feb.-May | 5–8 | ..... | 2–4 | 56 | |
| *GRASSES* | | | | | | |
| Alta Fescue | Sept.-Dec. | 6–8 | 15–20 | ½–1 | | 227,000 |
| Angleton | Sept.-Oct.; Jan.-Mar. | 4–6 | 9–12 | 0–½ | | 400,000 |
| Bahia | Sept.-Oct.; Feb.-Apr. | ..... | 12–20 | 0–½ | | 125,000 |
| Bermuda Hulled | Sept.-Oct.; Mar.-May | ..... | 5–10 | 0–½ | | 1,950,000 |
| Bermuda Unhulled | Sept.-Oct.; Mar.-May | ..... | 10–15 | 0–½ | | 1,300,000 |
| Big Bluestem | Feb.-April | 10–12 | 15–20 | 0–½ | | 150,000 |
| Black Grama | Feb.-April | 3–4 | 7–9 | 0–½ | | 1,335,000 |
| Blue Grama | Sept.-Feb. to May | ..... | 8–12 | 0–½ | | 900,000 |
| Blue Panicum | Sept.-Oct.; Jan.-Mar. | 1–2 | 3–6 | 0–½ | | 656,000 |
| Boer Lovegrass | Sept.-Oct.; Jan.-Mar. | ¼–½ | 1–2 | 0–½ | | 2,673,000 |
| Buffalo (in bur) | Feb.-May; Sept. | 5–10 | 15–20 | ½–¾ | | 40,000 |
| Canada Wild Rye | Sept.-Oct. | 3–5 | 7–12 | ½–1 | | 108,000 |
| Carpet | Sept.-Oct.; Feb.-Apr. | ..... | 8–12 | 0–½ | | 1,200,000 |
| Common Ryegrass | Sept.-March | ..... | 20–30 | 0–½ | | 225,000 |
| Crested Wheatgrass | Sept.–Oct. | 5–7 | 12–16 | ½–1 | | 217,000 |
| Curly Mesquite | Jan.-Mar. | 10–15 | 20–30 | 0–½ | | 268,000 |
| Dallis | Sept.-Oct.; Feb.-Apr. | 6–8 | 10–15 | 0–½ | | 275,000 |
| Galleta | Jan.-March | 20–30 | 50–60 | 0–½ | | 158,000 |
| Hairy Grama | Jan.-March | 6–8 | 15–18 | 0–½ | | 690,000 |
| Harding | Sept.-Oct. | 2–4 | 5–8 | ½–1 | | 347,000 |
| Indian | Jan.-March | 5–7 | 12–15 | 0–½ | | 170,000 |
| Johnson | April-June | ..... | 20–30 | 1 | | 120,000 |
| Kentucky Bluegrass | Feb.-Apr.; Sept.-Oct. | ..... | 15–20 | 0–½ | | 2,800,000 |
| Lehmann Lovegrass | Mar.-June; Aug.-Sept. | ¼–½ | 1–2 | 0–½ | | 7,000,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Little Bluestem | Feb.-April | 8–12 | 12–20 | 0–½ | | 260,000 |
| Meadow Fescue | Jan.-March | 10–15 | 25–30 | 0–½ | | 226,000 |
| Orchard | Jan.-March | 3–5 | 10–15 | 0–½ | | 500,000 |
| Perennial Ryegrass | Sept.-March | ..... | 20–30 | ¾–1 | | 250,000 |
| Redtop | Sept.-Oct.; Mar.-May | ..... | 8–10 | 0–½ | | 5,700,000 |
| Rescue | Sept.-Oct.; Jan.-Feb. | ..... | 15–30 | 0–½ | | 56,000 |
| Ribbed Paspalum | Jan.-April | 1–2 | 3–5 | 0–½ | | 1,100,000 |
| Rhodes | Sept.; Feb.-May | 3–6 | 10–20 | 0–½ | | 1,700,000 |
| St. Augustine | (Seed not harvested) | | | | | |
| Sand Bluestem | Jan.-March | 14–16 | 25–30 | 0–½ | | 100,000 |
| Sand Dropseed | Feb.-April | ..... | 3–5 | 0–½ | | 5,000,000 |
| Sand Lovegrass | Jan.-Mar.; Sept.-Oct. | ¼–½ | 1–2 | 0–½ | | 2,000,000 |
| Sideoats Grama | Feb.-May; July | 8–12 | 15–20 | 0–½ | | 190,000 |
| Slender Grama | Jan.-Mar. | 12–16 | 20–30 | 0–½ | | 240,000 |
| Sudan | Feb.-Sept. | 10–20 | 30–40 | ½–¾ | | 54,000 |
| Switchgrass | Jan.-Mar. | 1–3 | 4–6 | 0–½ | | 400,000 |
| Tall Fescue | Jan.-Mar.; Sept.-Oct. | 10–15 | 25–30 | ½–1 | | 226,000 |
| Vine Mesquite | Jan.-Mar. | 10–12 | 20–30 | ½–1 | | 150,000 |
| Weeping Lovegrass | Feb.-June | ½–1 | 1–2½ | 0–½ | | 1,600,000 |
| Western Wheatgrass | Sept.-Oct. | 6–8 | 15–18 | ½–1 | | 110,000 |
| Yellow Bluestem K. R. | Jan.-Mar.; Sept.-Oct. | 2–3 | 5–6 | 0–½ | | 800,000 |
| *LEGUMES* | | | | | | |
| *Alfalfa* | Sept.-Dec. | ..... | 20–30 | 1 | 60 | 200,000 |
| *Beans* | | | | | | |
| Soybeans | Feb.-May; July-Sept. | 20–30 | 60–90 | 2–3 | 60 | |
| Velvet | March-June | 20–30 | ..... | 2–4 | 60 | 800 |
| *Clover* | | | | | | |
| Alsike | Sept.-Oct. | ..... | 5–7 | 0–½ | | 680,000 |
| Alyce | Apr.-July | ..... | 15–20 | ½–1 | | 300,000 |
| Annual Yellow Sweet (*Melilotus indica*) | Sept.-Oct.; Jan.-Feb. | ..... | 20–30 | 0–½ | 60 | 335,000 |
| Berseem | Sept.-Oct. | ..... | 10–20 | ½–1 | | 150,000 |
| Biennial White Sweet | Sept.-Oct.; Feb.-Mar. | 5–10 | 15–25 | 0–½ | 60 | 260,000 |
| Black Medic | Sept.-Oct. | ..... | 10–15 | 0–½ | | 301,000 |
| Bur Hulled | Sept.-Nov.; Jan.-Mar. | ..... | 10–20 | 0–½ | 60 | 145,000 |
| Bur Unhulled | Aug.-Oct. | ..... | 60–80 | ½–1 | | 40,000 |
| Crimson | Aug.-Oct. | ..... | 10–20 | 0–½ | | 150,000 |
| Emerald Sweet | Sept.-Jan. | 4–6 | 15–25 | 0–½ | 60 | 300,000 |

| NAME OF CROP | TIME TO SOW | Pounds of Seed Required Per Acre | | Depth to Plant | Number of Pounds Per Bushel | Approx. Number of Seeds Per Pound |
|---|---|---|---|---|---|---|
| | | Rows | Broadcast | Inches | | |
| Evergreen Sweet | Jan.-Mar.; Sept.-Oct. | 4–6 | 15–25 | 0–½ | | 260,000 |
| Hop | Sept.-Oct.; Feb.-Mar. | ..... | 5–6 | 0–½ | | 986,000 |
| Hubam | Sept.-Jan. | 4–6 | 15–25 | 0–½ | 60 | 300,000 |
| Ladino | Feb.-Mar.; Sept.-Nov. | ..... | 5–7 | 0–½ | | 680,000 |
| Madrid Yellow Sweet | Sept.-Nov.; Jan.-Mar. | 4–6 | 15–25 | 0–½ | | 258,000 |
| Persian | Sept.-Nov.; Jan.-Mar. | ..... | 5–10 | 0–½ | 60 | 660,000 |
| Subterranean | Sept.-Oct. | ..... | 16–20 | ½–1 | | 72,000 |
| White Dutch | Sept.-Oct.; Jan.-Mar. | ..... | 5–10 | 0–½ | 60 | 680,000 |
| *Cowpeas* | | | | | | |
| Field | | | | | | |
| Chinese Red | Mar.-Sept. | 10–15 | 25–35 | 2–3 | 60 | |
| Large seeded varieties | Mar.-Sept. | 12–15 | 30–40 | 2–3 | 60 | |
| Table | | | | | | |
| Blackeye | Mar.-Sept. | 15–25 | 30–40 | 2–3 | 60 | |
| Cream Lady | Mar.-Sept. | 10–15 | 20–30 | 2–3 | 60 | |
| Crowder | Mar.-Sept. | 15–20 | 30–40 | 2–3 | 60 | |
| Purplehull | Mar.-Sept. | | | | | |
| Winter | | | | | | |
| Austrian Winter | Sept.-Dec. | 15–25 | 35–50 | 2–3 | 60 | |
| Canada Field | Sept.-Dec. | 15–25 | 35–50 | 2–3 | 60 | |
| Dixie Wonder | Sept.-Dec. | 15–25 | 35–50 | 2–3 | 60 | |
| Singletary (Caley) | Aug.-Dec. | 10–15 | 30–40 | 2 | 60 | |
| *Crotalaria spectabilis* | Mar.-July | 8–10 | 20–30 | ½–1 | 60 | 29,000 |
| *Guar* | Mar.-June; July-Oct. | 20–30 | 45–60 | 2–3 | | 13,000 |
| *Lespedeza* | | | | | | |
| Common | Feb.-April | ..... | 20–25 | ¾–1 | 25 | 340,000 |
| Kobe | Feb.-April | ..... | 20–25 | ¾–1 | 25 | 200,000 |
| Korean | Feb.-April | ..... | 20–25 | ¾–1 | 25 | 240,000 |
| Sericea (hulled) | Feb.-April | 6–8 | 15–20 | ¾–1 | 60 | 370,000 |
| *Lupine* | Sept.-Nov. | 20–30 | 50–60 | 1½–2 | | 2,600 |
| *Sesbania* | Apr.-July | 10–20 | 30–40 | 1 | | |
| *Vetch* | | | | | | |
| Common | Sept.-Oct. | 20–30 | 40–50 | 2–3 | 60 | 9,000 |
| Hairy | Sept.-Nov. | 12–15 | 25–35 | 2 | 60 | 16,000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Hungarian | Sept.-Oct. | 15–20 | 30–40 | 2 | 60 | 11,000 |
| Willamette | Sept.-Oct. | 20–30 | 40–50 | 2–3 | | 8,600 |
| *SMALL GRAINS* | | | | | | |
| (For grazing, hay or grain) | | | | | | |
| *Barley* | Sept.-Jan. | 20–25 | 70–100 | 2–3 | 48 | 13,000 |
| *Emmer* (Speltz) | Sept.-Dec. | 25–30 | 60–75 | 1–3 | | |
| *Millet* | | | | | | |
| Big German | Mar.-Sept. | 15–20 | 40–50 | 1–1½ | 50 | |
| Common | Mar.-Sept. | 15–20 | 40–50 | 1–1½ | 50 | |
| Pearl (Cattail) | Mar.-July | 8–12 | 25–30 | 1–1½ | 50 | |
| Proso | Mar.-July | 8–12 | 25–30 | 1–1½ | 50 | |
| *Oats* | | | | | | |
| Winter | Sept.-Dec. | 20–30 | 50–65 | 2 | 32 | |
| *Rye* | | | | | | |
| Abruzzi | Sept.-Dec. | 15–20 | 50–70 | 1–3 | 56 | |
| Balboa | Sept.-Dec. | 15–20 | 50–70 | 1–3 | 56 | |
| *Wheat* | | | | | | |
| Spring var. (Seabreeze) | Dec.-Jan. | 15–20 | 55–65 | 2–3 | 60 | |
| Winter | Sept.-Dec. | 15–20 | 55–65 | 2–3 | 60 | |
| *Sorghums* | | | | | | |
| Amber | Feb.-July | 8–20 | 40–80 | 2 | 50 | |
| Atlas Sorgo | Feb.-July | 8–15 | 60–100 | 2 | 50 | |
| Combine types | Feb.-Aug. | 8–12 | ..... | 2 | 50 | |
| Darso | Feb.-Aug. | 8–12 | ..... | 2 | 50 | |
| Feterita | Feb.-Aug. | 8–12 | ..... | 2 | 50 | |
| Hegari | Feb.-Sept. | 8–12 | ..... | 2 | 50 | |
| Kafir | Feb.-Aug. | 8–12 | ..... | 2 | 50 | |
| Schrock (Sagrain) | Feb.-Aug. | 8–12 | ..... | 2 | 50 | |
| Shallu (Egyptian wheat) | Feb.-Aug. | 10–15 | ..... | 2–3 | 50 | |
| Sourless Sorgo (Afr. Millet) | Feb.-July | 8–12 | 40–80 | 2 | 50 | |
| Sumac (Red Top) | Feb.–Sept. | 10–20 | 60–100 | 2 | 50 | |
| Syrup Cane | Feb.-July | 5–8 | ..... | 2 | 50 | |
| Yellow Milos | Feb.-Sept. | 10–12 | ..... | 2 | 50 | |
| *MISCELLANEOUS* | | | | | | |
| *Flax* | Oct.-Jan. | ..... | 30–40 | 1–1½ | 56 | |
| *Rape* | Feb.-Nov. | 4–6 | 15–20 | 1–1½ | 50 | |
| *Sunflower* | Feb.-June | 6–12 | ..... | 2–3 | 24 | |

# SOYBEANS

*Soja max*

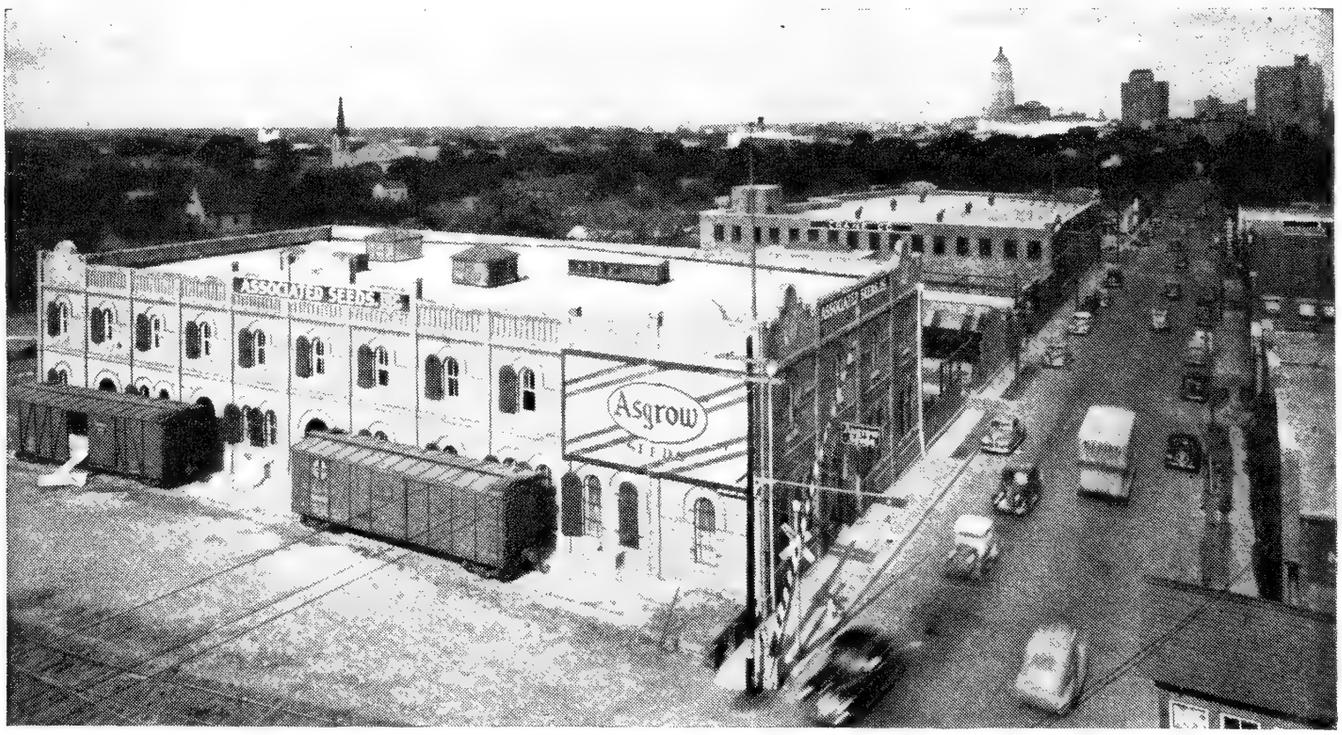
Soybeans are native to the Orient and recently have become of great agricultural and industrial importance in America, many varieties having been developed for diverse purposes. Under the growing conditions of south Texas, however, they are only recommended for green manure, to which the following varieties are well adapted. They will improve the structure of clay soils and build up others low in fertility. Seed should be inoculated before planting. It is hoped that the work now being carried on by several agencies will result in the development of other varieties with wider uses in this territory.

### LAREDO

Introduced from China in 1914 by U. S. Department of Agriculture. Recognized as the best adapted variety for drier climates of Texas. Quite cold hardy, and well adapted for early and late planting. Highly resistant to wilt and rootknot. Plants erect, branching freely, with fine stems; seed very small, flat, black.

### RED TANNER

A more recently developed type for southern conditions which has quickly gained acceptance. Very similar to Laredo, except for the color of the seed which is red instead of black.




Our main plant at San Antonio

# VELVET BEANS

*Stizolobium* spp.

Velvet beans produce a greater growth than any other summer annual legume planted for forage and soil improvement in the high rainfall belt of southeastern Texas. Immune to wilt and rarely attacked by root-knot, the species is more adaptable than cowpeas on rich soils in warm moist climates. Responds to irrigation and smothers out undesirable weeds, brush and grasses. Cattle and hogs graze and fatten on the matured seed in winter. The development and introduction of bunch types has increased the range of adaptability of this valuable legume.

### EARLY SPECKLED

The most extensively grown sort, with long trailing, coarse, viny stems often 20 feet in length and dense growth of large leaves. The grape-like clusters of showy purple blossoms are attractive.

A seed crop of Hubam clover (page 33) at harvest

## CLOVERS

No other legume crops are so well adapted to improve clay soils. Once regarded as common field weeds, the clovers are now among the most valuable temporary pasture legumes and soil improvement crops to prepare land for establishing permanent pasture grasses. They provide excellent grazing in cool moist periods of the year and flowering plants for bees during the warm spring and summer. The deeply penetrating root systems absorb subsoil minerals and, afterwards decaying, leave them available for other plants; they will also tend to loosen packed soils into a mellow, even, uniform structure, easily worked.

### ALSIKE *Trifolium hybridum*

Alsike clover is a long lived perennial, fields enduring four to six years in good soil. The stems are erect or ascending when crowded, but in isolated plants are spreading. Pink to white flower heads develop at each leaf axil along the entire stem. The stems are fine, and both stems and leaves are free from the hairiness that helps cause dusty hay. Used for grazing, hay, and soil improvement. Alsike thrives best in low-land soils where plenty of moisture is available and will tolerate considerable amounts of acidity. Rarely winter kills and often survives winter conditions that destroy other clovers.

### ALYCE *Alysicarpus vaginalis*

Alyce Clover is a summer annual used primarily as a hay crop but may be used for light grazing. Grows erect in dense stands but tends to fall down in sparse stands. Reaches a height of 18 to 40 inches. Leaflets are ½ to 2 inches long. Flowers purple in color and small brownish seeds are borne in small cylindrical and jointed pods. Clay soils are preferred because rootknot is not so injurious as in sandy soils.

### ANNUAL YELLOW BLOSSOM SWEETCLOVER *Melilotus indica*

An annual yellow flowering kind winter hardy only in the coastal soils. Chiefly used and best adapted as a cover crop to maintain good soil structure and fertility in orchards, used where an early quick growth is desired. Inexpensive to sow and the best sweet clover to plant with oats on bottom land. Matures early at the same time as oats therefore does not interfere with harvesting the oat crop. Plants spreading when young, erect 1½-2½ ft. when mature; stems fine, leafy, woody, but not tough.

BERSEEM *Trifolium alexandrinum*

Berseem is an annual white-flowered clover, much cultivated in the valley of the Nile in lower Egypt as a winter annual. As it is destroyed when the temperature falls to about 18° Fahrenheit, it can be grown in most of the United States only as a summer annual. Does not yield so well as Alsike or Red Clover. May be utilized in Texas as a winter legume in short rotations.

BIENNIAL WHITE SWEETCLOVER *Melilotus alba*

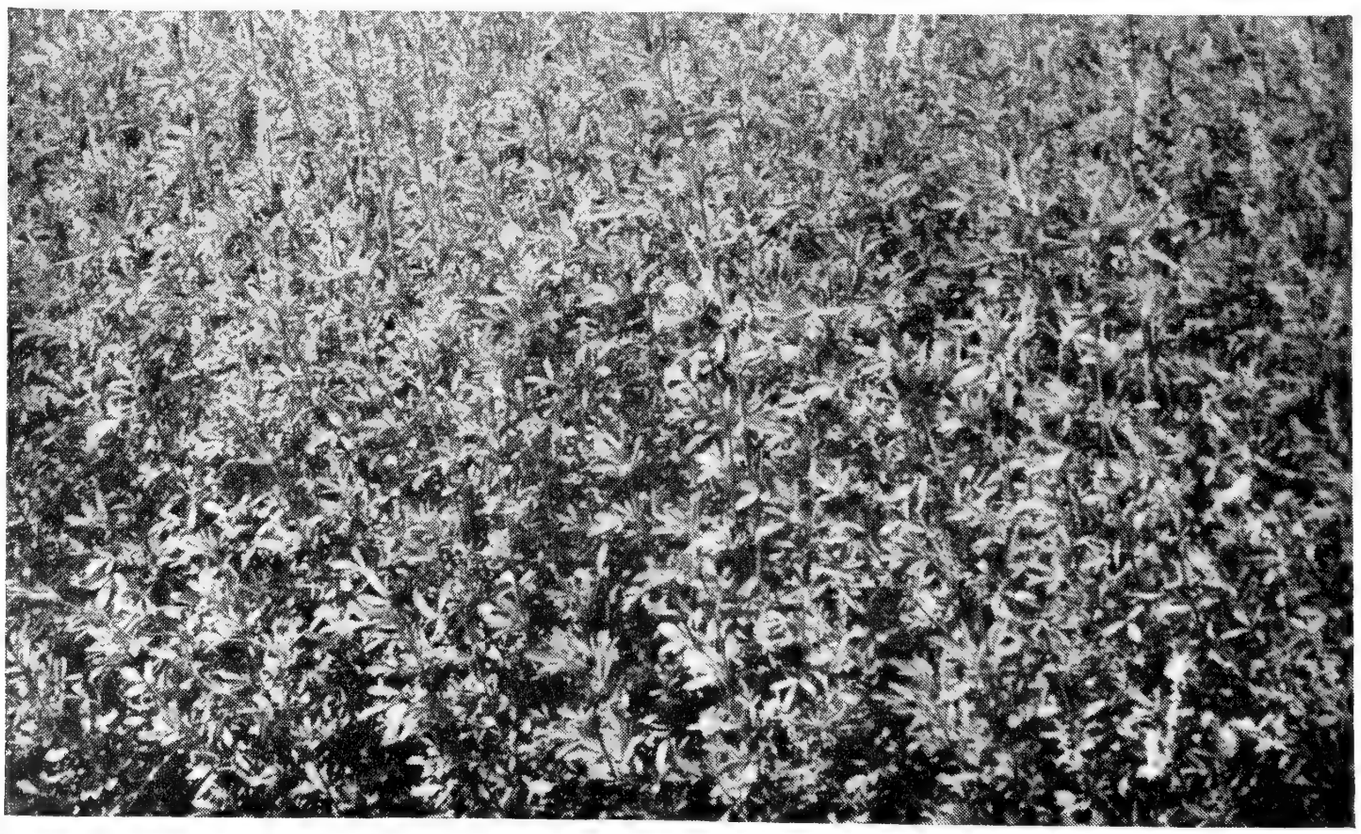
Extensively grown in north and northwest Texas grain and cattle grazing sections for its value as temporary pasture and a soil improvement crop. Will grow wherever alfalfa is adapted. Best used for spring planting in oats and on limestone soils too shallow for the best growth of alfalfa and Red Clover. Grows two years from one seeding and often attains a height of 10 ft. in the early spring of the second season. Plants develop fleshy deep penetrating roots. Highly prized as a bee plant.

BLACK MEDIC (Yellow Trefoil) *Medicago lupulina*

A biennial winter-hardy pasture legume, more closely related to alfalfa than the bur-clovers. Only adapted to moist, fertile, well-drained limestone soils. It takes the place of bur-clover where greater cold-resistance is required and is very suitable for sowing with Bermuda grass, Dallis grass, Kentucky bluegrass, and Ryegrass pasture to furnish grazing and maintain soil fertility. It will stand heavy grazing and trampling. Plants produce a dense, thick growth of short, creeping to sub-erect, soft, succulent, fine, leafy stems readily recognized by the small yellow flowers and the black one-seeded pods.

CALIFORNIA BUR-CLOVER *Medicago hispida*

So called because the seeds are enclosed in pods which have short spines or burs. The most valuable and most used of the winter bur-clovers for permanent pasture in Bermuda Grass. Dallis and Carpet Grass to furnish abundant green grazing while these grasses are dormant. It maintains the soil fertility and succeeds best on soils relatively high in lime, moist and well drained. The trailing leafy stems are readily grazed by all classes of livestock. Sometimes used as a green manure crop. In contrast to alfalfa and Black Medic, bur-clovers have a shallow, spreading root system enabling them to grow readily on sod land. For best results, use hulled, scarified seed of known variety and origin.



**Hubam Sweetclover: a deservedly popular annual legume**

CRIMSON *Trifolium incarnatum*

Crimson clover is a winter annual growing eight to thirty inches tall, has very hairy leaflets with whitish markings in the center and produces long, crimson-colored seed heads. Best adapted to well-drained, moderately productive to rich loam and clay loam soils in the high rainfall belt. Used for green manure, grazing, hay, and erosion control.

EMERALD SWEETCLOVER *Melilotus* sp.

An entirely new annual white-blossomed sweet clover developed by the Texas Agricultural Experiment Station and introduced in 1944. It branches profusely from the crown, is many and fine stemmed, leafy, green-seeded and is shorter than Hubam. Adapted wherever Hubam is grown, it is especially valuable as a pasture or hay crop, recovering more rapidly from close grazing than Hubam, which it nearly equals in soil-improving possibilities. The seed is readily distinguished by its emerald green color.

EVERGREEN SWEETCLOVER *Melilotus alba* var.

Evergreen is white flowered, biennial in growth habit, and its leaf, stipulate, stem, and flower characteristics are similar to common biennial white sweet clover. When compared to common biennial white clover, the first year's growth is tall, coarse, and 3 to 4 weeks later in maturity. It blooms over as long a period and sets seed freely. The harvesting of large seed yields is difficult because the seed shatters, due to the rank growth characteristics and the long blooming period. In the eastern edge of the Great Plains states frequent periods of high temperature and drought are conducive to low seed yields. Evergreen is well adapted to this area and throughout the corn belt.

HOP *Trifolium agrarium*

An annual winter and spring clover better suited to drier upland sandy soils than White Dutch. Furnishes excellent grazing and improves the soil. Plants 6"-8" high spreading to erect; stems numerous, fine and leafy, inclined to be woody, but not tough at maturity; flower heads yellow; seeds very small, shiny, oblong. Often found in mixtures with White Dutch.

HUBAM SWEETCLOVER *Melilotus alba* var. *annua*

A most valuable annual legume crop for grazing and soil improvement. Discovered as a sport in a field of Biennial Sweetclover, which it closely resembles; introduced as a commercial crop by Prof. H. D. Hughes about 1915, Hubam is subject to frost injury, but may be sown in south Texas from September through November or after January first; from San Antonio to Waco in January to March; from Dallas northward, in March and April. It makes rapid and luxuriant growth valuable for grazing, matures before cotton root rot becomes active and shows promise in the control of this pest. An important winter cover crop and soil builder in the citrus orchards of the Rio Grande Valley, can be plowed under with advantage when either young or mature; used also for silage and is very desirable for bees.

LADINO *Trifolium repens*

Ladino is a large form of White Dutch clover. It is rapid growing and spreads by creeping stems that root at the nodes. The leaf and flower stalks are hollow. Does not flower as profusely as White Dutch. Under favorable conditions leaves, stems, and flower heads are 2 to 4 times larger. Usually a perennial, but will die if conditions become too dry or when soil temperatures remain very high for considerable periods.
Used for soil improvement, orchard cover, pasture, hay, and silage. Adapted to the more fertile, moisture retaining soils. Should not be grown in areas having less than 35 inches rainfall annually unless under irrigation.

MADRID YELLOW SWEETCLOVER *Melilotus officinalis*

Madrid Sweetclover is a strain of *Melilotus officinalis.* It is a hardy biennial yellow variety, obtained by the U.S.D.A. several years ago from the Botanical Garden, Madrid, Spain. Lower-growing, leafier, finer-stemmed, and has an early seeding vigor that makes it more desirable for droughty conditions than common biennial sweet clover.
Used for hay, grazing, erosion control, and soil improvement. Adapted generally throughout the west on fairly tight soils high in lime and free of cotton root-rot. Plant in the spring in Texas and in the southern part a fall planting may be made.

**PERSIAN (Shaftal)** *Trifolium resupinatum*

A winter annual pasture and hay clover which is becoming more popular as the demand for more and better legumes increases. Well adapted in the South on heavy moist clay soils and on irrigated land, where it yields a high tonnage of good quality hay relatively easy to cure. Has proven satisfactory as a green manure crop for soil improvement. Plants spreading when grazed; but erect (1-2 ft.) when thickly planted and not grazed. Stems leafy, fine, numerous, soft and succulent; flower heads pink, very fragrant; seeds about the size of White Dutch, but shiny and dark green to purple.

**SUBTERRANEAN** *Trifolium subterraneum*

Subterranean is an unusual winter annual clover introduced from Australia. It has prostrate creeping stems, and the three leaflets forming each leaf are carried on upright stalks. Seed stalks short, turn downward to push into soil insuring reseeding the next year. Produces a heavy mass of vegetation which is hard to mow, but makes excellent grazing and is a real soil saver. Should be seeded with the first fall rains to make as much growth as possible before growth is slowed down by cold weather. Thrives on acid soils and leached-out hillsides, but must have well drained soils. Used for grazing, controls soil erosion, and makes excellent hay.

**WHITE DUTCH** *Trifolium repens*

The most popular clover for lawn grass mixtures. Grows best in the cool moist periods of the fall and spring, flourishing on well-drained, moist soils high in lime content. It adds forage value when sown with such grasses as Dallis, Carpet, Bermuda, and Kentucky bluegrass. Plants perennial, 3-12 inches; stems fine, numerous, leafy, creeping, soft and succulent; developing roots at the joints. Seeds very small, yellow to red, heart shaped.

## CROTALARIA

The crotalarias, of which there are several hundred species though only a few of economic importance, are native to subtropical and tropical regions. They require a long growing season, high temperatures and fairly good moisture supply. Recommended by the U. S. Department of Agriculture as a trap crop for nematodes, which enter the roots but are unable to reproduce and soon die.

*Crotalaria spectabilis* (Showy)

The most commonly grown crotalaria to furnish green manure; it is unpalatable to stock and may be toxic. One of the best adapted summer legumes for enriching moist sandy soils in the vegetable and citrus orchard sections of the South and the Rio Grande Valley. May yield as high as 30,000-40,000 pounds of green growth per acre. The stalks are hollow to slightly pithy and decay quickly when turned under. Plants annual, 5–7 ft. tall, bushy, widely branched when spaced; quick growing and leafy. The only legume thus far known to be completely immune to rootknot. Responds well to irrigation. Crowds out noxious weeds and grasses, and is also a valuable erosion-control crop.

Harvesting a clover seed crop

## GUAR

*Cyanopsis psoraloides*

A summer annual legume introduced from India. Plant an erect herb 2 to 3 feet tall with angularly toothed trifoliate leaves, axillary racemes of small purplish flowers. A good seeder and drought-resistant. Used as a green manure crop, summer cover for hot climate fields, and forage. Soil adaptation same as for Cowpeas but is mildly susceptible to cotton root-rot. May be grown throughout the southern United States.

## LESPEDEZA

The Lespedezas are Oriental legumes, but not clovers. Most valuable hot weather pasture, hay, and soil-building crops for humid regions from the Gulf of Mexico to Indiana, on soils low in lime but fertile, moist but well drained and preferably with high phosphorous content. The leafy stems are inclined to be woody, but are readily grazed by all classes of livestock, and yield a highly nutritious, readily digestible hay. The much branched lateral roots are numerous, extending widely through the sub-surface and increasing the value of lespedeza for erosion-control. They are prolific seed producers and highly prized as ground feed for all classes of livestock.

COMMON *Lespedeza striata*

The species in most general use in the South. Seldom grows more than 6-9 inches tall, but because of low moisture content yields up to two tons per acre of very fine quality air-dried hay. Provides grazing and maintains soil fertility in pasture with Bermuda, Dallis, Carpet, Red Top and Bluegrass, when too hot for other pasture crops.

KOBE (Chinese) *Lespedeza striata* var. *kobe*

An improved variety of Common. Grows somewhat taller and is used extensively in grain fields for summer grazing and hay. Withstands drought well. Later than Korean and yields more hay but less seed.

KOREAN *Lespedeza stipulacea*

A very early, large, rather coarse kind. Better suited to lime soils than other lespedezas. Retains its leaves at maturity and is an excellent grazing and hay plant for oat fields, and to control soil erosion. Often in mixtures with other related species. Especially adaptable for the upper South.

SERICEA *Lespedeza cuneata*

A perennial species, increasingly popular for its value as a soil erosion control crop, hay crop, and as a food and cover crop for wild game. Yields good quality hay on fertile sandy soils too low in lime for alfalfa, and seed high in protein. Plants send up numerous leafy stems 2-4 ft. tall; flower profusely in summer, set seed in the fall. Somewhat slow to start growth from seedling stage, but once established remains indefinitely. A plant with very low moisture content, yet palatable and easy to cure for hay. Probably has a wider range of adaptability when row planted to permit occasional cultivation.

## LUPINE

Long used in sandy areas of central Europe as a soil-improvement crop and now finding extended use for this purpose in the United States, Russia, Australia and other countries, particularly since the development of the "sweet" type, so called because the toxic alkaloids are absent.

BLUE LUPINE *Lupinus angustifolius*

Blue Lupine is an annual, fall-sown, high seed-producing legume. Used for green manure and soil building, not used for grazing due to the possibility of toxicity. Adapted to the sour sandy soils of the coastal plains in the thirty inch rainfall belt. Is not cold-resistant.

SWEET BLUE LUPINE *Lupinus angustifolius*

Sweet Blue Lupine is a relatively new annual legume with the same soil building characteristics as Blue Lupine but with the added advantage of being palatable and non-toxic to livestock, thus a pasture hay or silage crop for fall planting. Seed must be inoculated. Normal growth of green manure is 20 to 30 tons per acre.

# COWPEAS

*Vigna sinensis*

The cowpea is native to Africa. Introduced to American agriculture as early as 1714; the South's most important annual summer legume crop for food, feed, and soil improvement. The many varieties and types make this species more widely adapted to a greater diversity of Southern soils, seasons, and cultural conditions than any other summer legume. The cowpea is well adapted to soils low in lime and in fertility, but well drained; growing best through periods of warm, moist to hot dry weather.

The better grades of planting seed are grown in regions where season and climate are suitable for the production of good quality seed free from mold and weather stains. The varieties listed here are those in most general use throughout Texas and the Southwest.

The number of days given for each variety represents an average and is intended primarily for purposes of comparison.

## FOR FIELD USE

### BRABHAM (Bush)

Originated as a natural cross between Iron and Whippoorwill, retaining the former's resistance to wilt and nematodes. A widely adapted variety, used for hay, grazing and soil improvement. Plants tall, semi-bushy; pods long, held high; seed similar to Whippoorwill but somewhat smaller. 90 days

### CHINESE RED

Widely adapted and extensively used in Texas for soil improvement, due to quick growth and early maturity. May be combine harvested, and because of early maturity two crops are frequently produced in one season. Plants dwarf, erect, of uniform maturity; pods small, round, held high. Seed very small, hard, round, pale red to red. 70 days

### IRON

An old, early established variety, highly resistant to wilt and root-knot disease. Well adapted for combine harvesting. Plants upright, semi-bushy, not so prolific in seed yield as other sorts; pods held high, seeds small, cream buff to brownish and very hard. 95 days

### NEW ERA (Bluewhip)

One of the more important commercial hay and soil building sorts. Produces a high seed yield. Suitable for combine harvesting. Plants tall, erect, bushy, very prolific; pods held high; seed small, buff, uniformly speckled with blue. 80 days

### WHIPPOORWILL

One of the oldest varieties and most commonly grown for high yield of hay, for grazing and soil building. Well adapted to clay soils for early and late planting. Plants tall, vining, vigorous; pods long, held high; seed buff-brown and speckled. 90 days

Cowpeas: Valuable for soil improvement as well as the crop

Brown Crowder: a popular early variety

## FOR TABLE USE

The following varieties are commonly called Table Peas in the South, as distinguished from Garden, English, or Stock Peas.

### BLACK EYE, Large

A standard main crop variety with tall, strong, prolific plants. Pods large, long and easily shelled. Green peas large and attractive; reach full maturity about 15 days later and have good keeping qualities as dried peas. 65-75 days

### BROWN CROWDER

An early edible-podded variety, used also for green shelled peas for canning and for dried peas. Desirable as a forage crop and for soil improvement. Plant dark green, thick-stemmed and branching. Pods round, plump, blunt, medium green, filled with brownish peas crowded tightly together. Seed smooth, buff-brown with darker brown eye. 75-80 days

### CREAM CROWDER

Quite similar to Brown Crowder and used in various ways. Plant vigorous, dark green, with tendrils at top. Pods round, blunt, medium green, containing light green peas closely crowded together. Seed smooth, medium, cream with buff eye. 75-80 days

### CREAM LADY

A very good variety of this group for table use, grown also for soil improvement. Plant stocky, dark green, branching. Pods oval, medium green, straight, blunt, closely filled with light green, tender peas. Seed small, smooth, ivory white. Widely adapted. 75-80 days

### PURPLEHULL

A standard home garden and market variety; of good flavor for canning and green shelled peas. Pods purple, somewhat tough, seed smooth, medium, cream-white with buff to brown eye. 70-80 days

# WINTER PEAS

Winter peas are legumes extensively used in the South as a winter soil-improvement crop, widely adapted and well suited to planting with small grains.

### AUSTRIAN WINTER *Pisum arvense*

A very widely used and well adapted winter legume soil improvement crop for the cotton soils of Texas and other southern states. Shows a preference for well drained fairly fertile loam soils. Produces a rank growth and high tonnage of green manure which decays quickly when plowed under. Makes its best growth in the cool, moist periods of the fall and spring. Often planted with oats for grazing and soil building.

### CANADA FIELD *Pisum sativum*

A northern commercial field crop resistant to Fusarium wilt. Suited to mixed soils in Texas and the Southwest for fall and early spring planting as a soil improvement crop and for green, high protein grazing. In some sections used as a home garden variety for table peas. Probably should be used more often for soil building as it will grow in the cool dry periods better than most other legumes and may be planted with oats.

Austrian Winter Pea

DIXIE WONDER *Pisum arvense*

This new annual legume was developed especially as a southern winter cover crop that will mature one month before so-called winter legumes, giving a full growth of green manure before spring plowing. It is fairly winter-resistant as shown by tests throughout the South. Its quick growth provides excellent ground cover to check winter erosion. These characteristics are making this variety extremely popular since it fills a long felt need in the South.

SINGLETARY *Lathyrus hirsutus*

A winter legume, also known as Caley pea, adapted to the cotton belt of the United States, used for soil building and winter grazing. Produces a high tonnage of green manure which decays rapidly when turned under. Makes its growth a little later in the spring than some of the other winter legumes when planted at the same time. A prolific seeder and will usually reseed itself. Commonly planted in mixtures with oats. When planted alone, 40 pounds per acre should be used; when planted with oats, 20 to 30 pounds is sufficient.

## SESBANIA

HEMP *Sesbania exaltata*

A native, erect, tall, quick-growing annual summer legume which shows a preference for hard-pan sojls. Used extensively in irrigated sections for its value as a soil-improvement crop. Protects citrus orchards during hot summer weather; used also to furnish food for game birds during the fall. Produces an enormous tonnage of green succulent growth ready to plow under in 4-6 weeks, when it decays rapidly, adding nitrogen and organic matter to the soil, and helping to bring it into good mechanical condition. Its rapid growth can crowd out noxious weeds and grasses.

Martin Combine stock seed: a step in our production of Certified seed

# VETCHES

Vetches are adapted and widely used to maintain soil fertility and furnish feed for domesticated animals, also food and cover for wild game. They are frequently planted to provide green manure in orchards, and cotton fields on soils somewhat low in lime. The tender and succulent vine-like growth is easy to cut into soil with a disk harrow, where it decays readily.

Hairy Vetch

COMMON (Spring) *Vicia sativa*

A very early maturing, non-hardy vetch. Probably better adapted than other vetches or legumes to grow on moist, fertile loam soils as companion crop with spring grain crops for soil building, grazing, and hay. Grows rapidly during the cool moist periods of early fall and spring. Plants semi-viny, having slightly larger leaves and stems than Hairy Vetch. Has about same adaptation to climate as Bur-clover, but requires a much higher fertility level than Hairy Vetch. Seed large, pillow-shaped, speckled.

HAIRY (Winter) *Vicia villosa*

A winter-hardy variety well adapted on soils of somewhat low fertility and less exacting as to soil moisture requirements for successful growth. Used extensively for hay and grazing interplanted with rye, which protects the young vetch from cold dry winds and supports the growing vine. Also an important soil builder in orchards and on crop lands. Plants hairy, viny, trailing; stems terminated by bracted tendrils; flowers many and of a bluish color. Seed globular, medium to large, black.

HUNGARIAN *Vicia pannonica*

A rather winter-hardy variety used in the South and Southwest to furnish green growth for soil building, grazing, and hay on moist but fertile heavy clay soils where other vetches fail to grow well. Reported to be resistant to aphid damage. Plants are less viny than Hairy Vetch, but will produce very rank growth without the support of interplanted small grain crops. Stems and leaves covered with very long, fine, hairs which give the plants a grayish appearance. Seed large, speckled, angled.

WILLAMETTE *Vicia sativa*

A horticultural form of the common vetch. Less winter-hardy than hairy vetch, stems coarser, and leaves larger. Best adapted to regions with mild winters.

# SMALL GRAINS FOR GRAZING, HAY OR GRAIN

## BARLEY

*Hordeum vulgare*

For succulent and nutritious grazing. Withstands alkali soils and the drier climatic conditions better than other small grains, but thrives best on fertile, moist, porous lime soils with good drainage. Often sown with oats, rye, and wheat for a well-balanced mixed pasture. Plants not so tall as wheat and oats but earlier maturing; stems coarse; leaves broad, bluish-green. Especially desirable for early fall pasture.

### TUNIS

A spring variety developed by the Texas Agricultural Experiment Station and recommended for fall seeding in the southern blacklands of the state. It is highly resistant to leaf rust and well adapted to harvesting by direct combining. The seed of Tunis barley should always be treated with a seed protectant for the control of seedling blight and leaf blotch.

### WINTEX

A winter variety developed by the Texas Agricultural Experiment Station which is especially well adapted to North Central Texas.

## EMMER (Speltz)

*Triticum dicoccum*

A winter grazing and grain crop of the wheat group well adapted to cold, wet, sandy and clay soils, also used in south Texas vegetable fields as a wind break to protect young vegetable crops, particularly vine crops. Plants form dense clumps, growing tall and erect, with stiff straw. About as winter hardy as oats. Seed remains in chaff when threshed, then is fed as ground feed to livestock. Emmer is very resistant to stem rust and smut; it should not be confused with Spelt, *Triticum spelta,* a kindred species which is susceptible to rust and not adapted to the Southwest. The common name "speltz," which is applied to both species, is confusing and should be discarded.

## MILLET

Millets have been grown since ancient times for food, feed and hay. Of the several kinds and varieties of millet—Big German, Pearl, Proso, Hungarian, and Siberian—the first named is most widely grown because of its high yields of hay and seed, and its wide range of climatic adaptation. Millets are warm weather crops, not cold hardy or drought resistant; and having a very extensive but shallow, fine, fibrous root system. They require a loose, loamy, moist soil, highly fertile, free of trash and well worked. The best quality hay results when cut in the bloom stage.

### BIG GERMAN *Setaria italica*

Introduced to American agriculture about 1870 and long regarded as the most valuable millet for producing consistent high yields of fine quality hay, in about 60 days, or seed, highly prized as feed for poultry about two weeks later. Its range of adaptation may be increased by row planting, and cultivation controls weed growth, conserves moisture, and reduces the soil condition referred to as "sod bound". Plants 3-5 ft. tall, stems coarse and very leafy. Seedheads large, long, heavy seeded; seed small, yellow; seedhulls intact.

**COMMON** *Setaria italica*

A very quick growing variety that produces in about 60 days a first class quality of millet hay valued on account of numerous slender stems and abundant leaves. Adapted to drier soils than the other species. The yellow to straw colored, shiny seeds are a main constituent of prepared bird foods. Should not be confused with Hungarian yellow to purple seed, or Siberian, which is always orange in color.

**PEARL (Cattail)** *Pennisetum glaucum*

An annual summer, green grazing crop vigorous in growth and immune to leaf diseases. Well adapted to moist sandy soils in regions of high humidity along coast of Texas and other southern States. Gives best grazing before the seed-heads develop. Plants tall and erect 4-6 ft. with numerous leafy stems, somewhat coarse but succulent and very nutritious, brittle at maturity. Seedheads long and spikelike; seed cone-shaped, pearl gray. Furnishes abundant grazing in 4-6 weeks. May be planted several times during the warm season.

**PROSO (Hog)** *Panicum miliaceum*

A short season crop for dry climates; grown for the seed which is ground to feed hogs and poultry. Often referred to as "Broomcorn millet" due to similarity of the seedheads. The seeds are white or straw colored, smooth and shiny.

## OATS

*Avena sativa*

Of all the small grain crops used in our territory to furnish green grazing, adapted varieties of oats are most generally grown. Oats have a higher moisture requirement than any other small grain crop and make their best growth on fertile, moist, well drained and well worked soils. There is much confusion in kinds and varieties sold on the market under various trade names. Consequently only seed of known variety and origin should be accepted.

**FERGUSON 922**

Developed by A. M. Ferguson of Sherman, Texas. A red oat variety adapted to the heavy soils of the middle cotton belt of Texas; winter hardy and shatter proof. Furnishes abundant green grazing over a long period of time. The plants form heavy spreading turf; stems coarse, strong, erect, quite leafy. Seedheads large, compact to spreading. Seeds large, plump, reddish, bearded.

**FULGRAIN**

A combine type of milling oat, developed and introduced by Coker Seed Co. Not so winter hardy as Red oats but matures earlier and furnishes good grazing. Plants tiller freely, stand erect, are smut and crown rust resistant. Seedheads large; seed plump, thin hulled, yellowish; beards few to none.

**FULTEX**

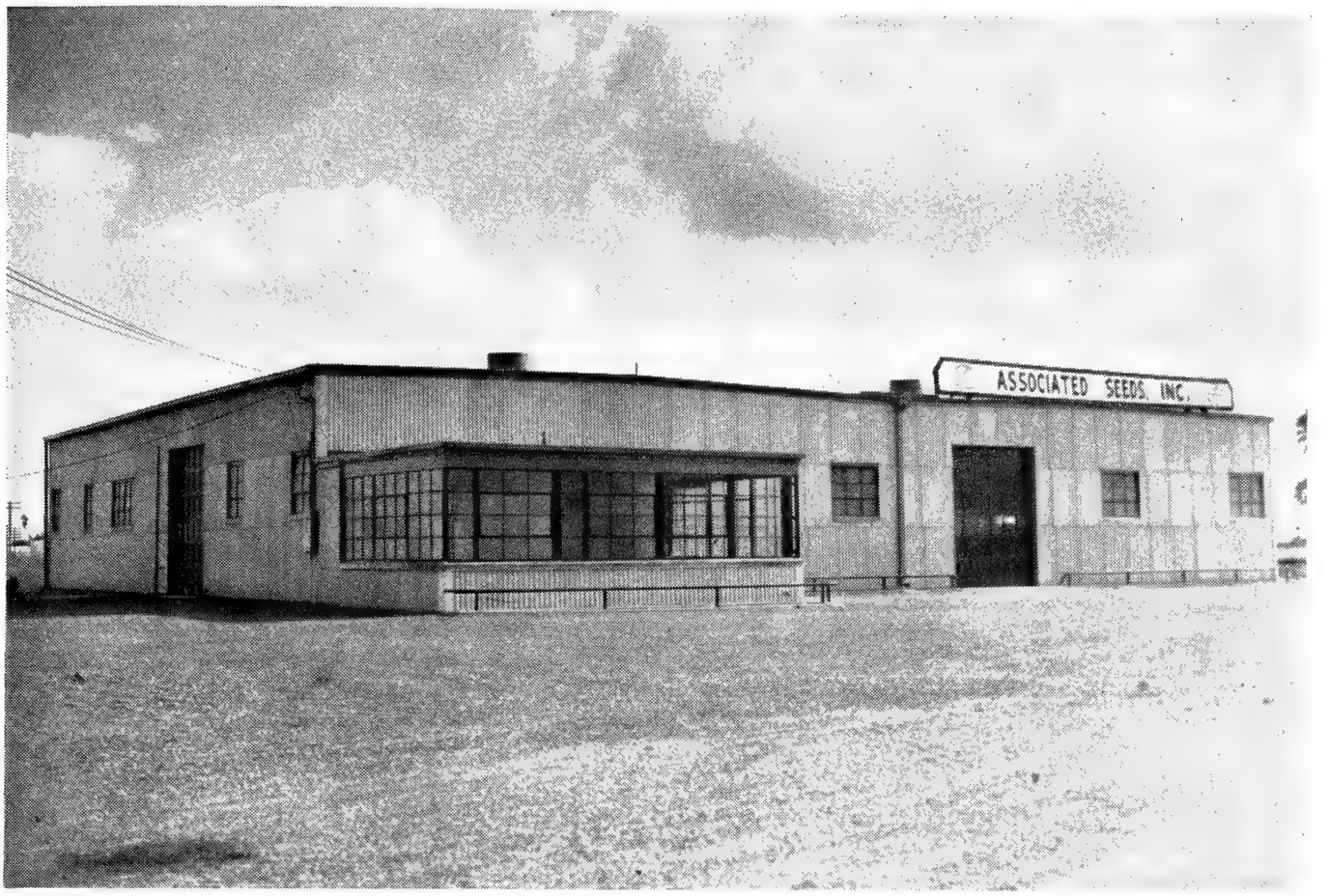
A cross between Fulghum and Victoria, developed by the Texas Agricultural Experiment Station. Highly resistant to crown rust and smut, and has a short, strong straw which makes it desirable for direct combining. Recommended especially for grain production on rich blackland soils, where other varieties are subject to lodging.

**KNOTA**

The leading strain of the Fulghum variety grown rather extensively in Missouri, Oklahoma, Texas, and Kansas. A week to ten days earlier than Red Rustproof. Tillers freely giving an abundance of grazing; yields high under favorable conditions.

**NEW NORTEX**

Developed by the Texas Agricultural Experiment Station about 1930, through selection from Texas Red Oats. Very popular in the South's oat belt for grazing and seed crops. Winter hardy, crown rust resistant, shatter proof; with consistently high yields and good milling qualities.

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### RANGER

A crown rust and smut resistant variety developed for the coastal region. Of the same parentage as Rustler; a few days later in maturity and grows slightly taller. Primarily a heavy-stooling vegetative type highly recommended for grazing, but also capable of making a relatively good yield of grain in the Texas Coastal area.

### RUSTLER

A cross between Nortex and Victoria, developed by the Texas Agricultural Experiment Station and the U. S. Department of Agriculture and distributed to Texas farmers in 1941. Crown rust and smut resistant, one of the best varieties for grazing, and as a grain crop for the Gulf Coast where an early grain feed crop is needed. Plants erect, free stooling, of early and uniform maturity.

### TEXAS RED

Long the most popular oat for South Texas winter pasture but now being replaced by better varieties of more recent development.

### VICLAND

A new, high-yielding, disease-resistant variety first distributed by the Wisconsin Agricultural Experiment Station in 1941. Selected from a cross between Victoria and Richland. Highly resistant to crown rust, leaf rust, and smut. The stalk is short and strong, adapting it for combining. Kernels are medium in size and well filled, with light or no awns.

### VICTORGRAIN

Introduced by Coker Seed Co. as a crown rust and smut resistant variety of high grain quality. Plants of medium height, with stiff straw, earlier than Red Rust Proof. Though primarily a grain oat, may also be used for early grazing.

### WINTER TURF

An old grazing variety now obsolete in Texas, but its name still remains in use among some growers as a synonym for other varieties which are grown for grazing.

# RYE

*Secale cereale*

## ABRUZZI

Abruzzi rye was introduced from Italy by the U.S.D.A. in 1900 and has given remarkably good results in the greater part of the cotton belt. Rapid and vigorous in growth, it is very valuable for grazing and cover crop purposes and also produces good yields of grain under ordinary farming conditions. It is larger than other varieties of rye.

## BALBOA

Introduced to this country from southern Europe and used for winter grazing and as a grain crop. Characterized by a rapid upright growth. Is more winter hardy than Abruzzi.

Abruzzi rye and Hairy vetch

# WHEAT

*Triticum aestivum*

One of the important grain crops in areas further north, but in south Texas used chiefly to furnish grazing in the coolest part of the year. Sown in combination with oats and barley for this purpose. Better adapted to hard land than other small grain crops and is somewhat more resistant to cold.

### AUSTIN

A bearded brown-chaffed, soft red winter wheat developed by the Texas Experiment Station, adapted to the black lands and coastal area of the state. Resistant to leaf rust, stem rust and loose smut. Non-shattering and stands well for combine harvesting.

### BLACKHULL

A hard red winter wheat grown most extensively in Texas, Oklahoma, and Kansas. Differs from Turkey in being a little earlier and taller and in having slightly stiffer straw and somewhat larger and softer kernels. It is not resistant to rust or bunt, but its earliness may enable it to escape severe rust injury. Also less winter hardy than Turkey.

### COMANCHE

A new bunt-resistant variety of wheat that is being recommended for the hard red winter wheat region of Northwestern Texas. Also resists leaf rust, but not stem rust which it often escapes by its earliness. Milling and baking qualities are excellent. Test weight per bushel is high and yields compare well with other varieties.

### PAWNEE

A Tenmarq type of wheat but has a tendency to shatter. Has stiff straw, slight resistance to leaf rust and is resistant to loose smut. Milling and baking qualities good. Recommended for Central West Texas and Panhandle area.

### SEABREEZE

A variety of wheat released in 1945 by the Texas Agricultural Experiment Station. It is a beardless type, shows marked resistance to leaf rust but is mildly susceptible to stem rust. Not a winter variety. Adapted to the area south of San Antonio and the Rio Grande Valley.

### TENMARQ

A hard red winter wheat distributed from the Kansas Agricultural Experiment Station in 1932. In 1944 it was grown more widely in the United States than any other wheat. Its weight per bushel is low, but the milling and baking qualities are excellent.

### TURKEY RED

A hard red winter wheat grown extensively throughout the United States. Heads bearded, chaff white, and the grain hard and dark red. Straw rather weak and inclined to lodge when grown on fertile soil in areas of high rainfall. Some resistance to bunt or stinking smut.

### WESTAR

A variety of hard red winter wheat of high quality developed for the Panhandle region of Texas. Characteristics include high yield, high test weight, good milling and baking qualities and very high resistance to leaf rust. About three days earlier than Tenmarq and stands well for combining.

### WICHITA

An early maturing hard red winter wheat similar to Early Blackhull but with improved milling and baking qualities. Is susceptible to leaf and stem rust and to smut but due to early maturity, it often escapes serious rust injury. Straw not so stiff as that of Comanche or Tenmarq. Test weight high, but yield slightly under later maturing varieties. Will average about ten days earlier than Tenmarq under Texas conditions.

# SORGHUMS

*Sorghum vulgare*

The sorghums are members of the grass family, native to Africa and Asia; now among the most important crops grown in the United States for the grains, stalks, and plant juices which are used for food, feed and industrial purposes. There are many diverse varieties and types of sorghums, widely adapted to soils, seasons and climates, and the grain sorghums may be described as the grain crop of dry lands.

The development of combine types in recent years has made sorghum one of America's major grain crops, more than half of the total being grown in Texas.

Crops of the sorghum seeds for planting are largely grown in semi-arid regions where conditions are favorable to the production of consistently good yields of high quality seed, free from diseases, insect damage, or weather spoilage.

Sorghum seedlings are somewhat slow to start growth. Only good grades of seed should be planted, in well prepared soil and cultivated to control weeds.

In the following lists of the various sorghum groups, the figures given for maturity and plant height represent averages compiled from observations in different years and at various places. They will naturally be subject to variation and are intended primarily for purposes of comparison.

A field of Martin Combine Milo

## DWARF COMBINE SORGHUMS

| | Days to Maturity | Height in Feet |
|---|---|---|
| **CAPROCK** | 115 | 3½-4½ |

A combine variety of the same parentage as Plainsman but leafier and shows a tendency to sucker more freely; seedheads large, spreading at maturity; seed large, bright-red, somewhat soft. For longer season areas and fertile soils.

| | Days to Maturity | Height in Feet |
|---|---|---|
| **COMBINE KAFIR** | 110 | 3½-4 |

A dwarf variety closely resembling Texas Blackhull kafir. Stalk thick and stout, tillers slightly and will stand long after maturity. Heads are long and cylindrical. Seeds are white with the black specks typical of kafir, and are of medium size and somewhat hard.

| | | |
|---|---|---|
| **EDWARDS' WHITE COMBINE** | 100 | 3½-4 |

A white-seeded dwarf combine variety developed by Aubrey Edwards at Shallowater in 1943. Resembles Plainsman except for seed color. Stands well and yield tests have been favorable.

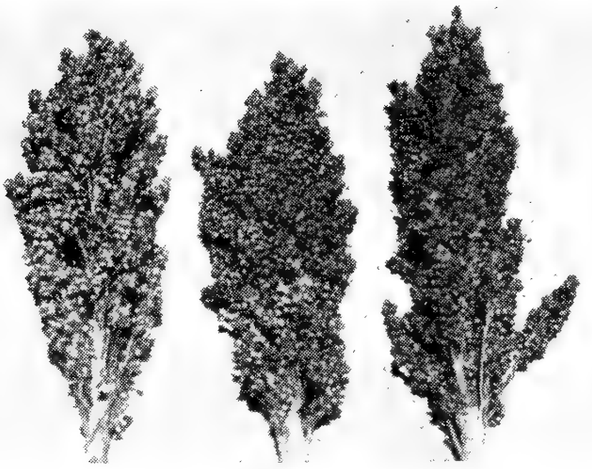
Typical heads of Martin Combine

| | | |
|---|---|---|
| **MARTIN COMBINE** | 100 | 3½-4 |

A disease resistant, non-shattering, uniform, early maturing variety, developed from Wheatland by W. P. Martin at Lubbock, Texas, in 1937, now the most popular and widely grown type of combine sorghum. Withstands wind damage and cures well for field combine harvesting under humid conditions. Affords a consistently high yield of grain with high feed value. Plants stand erect, not leafy, with long seed stems; seed-heads erect, long, somewhat open, spreading at maturity; seed reddish, shatter-proof, slightly hard but brittle.

| | | |
|---|---|---|
| **PLAINSMAN** | 110 | 3½-4½ |

A high high-yielding variety developed by the Texas Agricultural Experiment Station, probably better adapted to rather dry climatic conditions. Plants stand erect, few tillers; seed stems somewhat short; seedheads erect, long, large, slightly compact; seed rather soft, large, of reddish color; shatterproof.



Caprock Plainsman Martin

# YELLOW MILOS
(MILO MAIZE)

| | Days to Maturity | Height in Feet |
|---|---|---|
| **DOUBLE DWARF YELLOW SOONER**<br>**DOUBLE DWARF WHITE SOONER** | 90 | 3-4 |

These new 60-day varieties are selections of F3 generation from a cross between Early White Milo and Double Dwarf Yellow. Except for color both varieties are the same. Both bloom in 60 days or less and mature in 90 days thus being invaluable as "catch crops" where early crops or other plantings have failed. These Sooner varieties offer both early maturity and double dwarf characteristics for combine harvesting. Stalks are slender, bear 10 to 12 leaves, tiller freely and tiller heads mature about same time as main heads. Heads are typically milo, oval, compact with short seed branches. Exsertion from boot is good. Both are pythium root-rot resistant.

**SOONER No. 8 (60-Day Milo)** — 90 — 3

Similar to Dwarf Yellow milo but is an earlier maturing variety, resistant to pythium root-rot; stalk slender, heads not so compact, quite drought resistant; a dependable producer, suitable for a very quick growing feed crop and good for late planting. Seed yellow, large, soft.

**TEXAS DOUBLE DWARF** — 100 — 2½-3

Similar to Single Dwarf, except for shorter plants, adapted for very early planting to furnish feed before corn is ready and for sections where oats are not grown as grain crops. Produces relatively high yields of large soft yellow grain, stands for combine harvest in dry climates and responds to irrigation. Often planted after oats and peas for a late crop. This popular variety is resistant to pythium root-rot.

**TEXAS DWARF** — 105 — 4

A widely adapted high yielding grain sorghum very similar to the original Standard Yellow milo from which it seems to have developed about 40 years ago. Seed stems not entirely curved, tillers freely, stands well for combining in dry climates. Responds well to irrigation and under favorable conditions is often used for bundle feed. Heads compact, club shaped. Seed large, yellow, soft. Resistant to pythium root-root.

# SORGHUMS FOR GRAIN AND FORAGE

| | Days to Maturity | Height in Feet |
|---|---|---|
| **BONITA** | 100 | 4-4½ |

Bonita, a product of Texas Experiment Station breeding, produces white, soft grain. It is not well suited to the more humid areas because of its very tight heads and extensive suckering, which results in uneven maturity but is better suited to the drier areas where tight heads are of no disadvantage. May be of value as a bundle feed or for forage purposes.

| | | |
|---|---|---|
| **DARSO 28** | 115 | 3-5 |

The original Darso, probably a chance cross between some variety of sweet sorghum and a grain sorghum, was introduced by the Oklahoma Agricultural Experiment Station from seed grown in Logan County, Okla., about 30 years ago. Popular in the Rio Grande Valley for its high yield of both grain and forage; valued as a cured bundle feed. Widely adapted though not extensively grown, resistant to shattering and bird damage; may be planted very early or very late, withstands wind damage and is fairly uniform in maturity. Stems stout, stocky, very leafy, juicy, slightly sweet. Seedheads erect, long, fairly compact. Seed medium to large; seedhulls reddish-brown. When cut and cured in the bundle makes the finest quality of feed, either ground or fed as hay, with very excellent keeping qualities. Darso 28, an improved strain developed by the Texas Experiment Station, is resistant to pythium root-rot.

Spur Feterita

Shallu

| | Days to Maturity | Height in Feet |
|---|---|---|
| **EARLY HEGARI** | 100 | 4 |

An earlier-maturing variety of Hegari developed and distributed by the Texas Experiment Station in 1938. Identical with Hegari except that it is 10 to 15 days earlier, has fewer leaves and will head and make grain under practically all conditions. It is drought resistant, but tillers and responds to irrigation, and to good soil and moisture. More generally adapted for late planting than other grain and forage sorghums, this short season crop produces an excellent quality of feed. Probably deserves more attention than it has yet received and is especially recommended for late spring and fall planting.

| | Days to Maturity | Height in Feet |
|---|---|---|
| **HEGARI** | 115 | 3-5 |

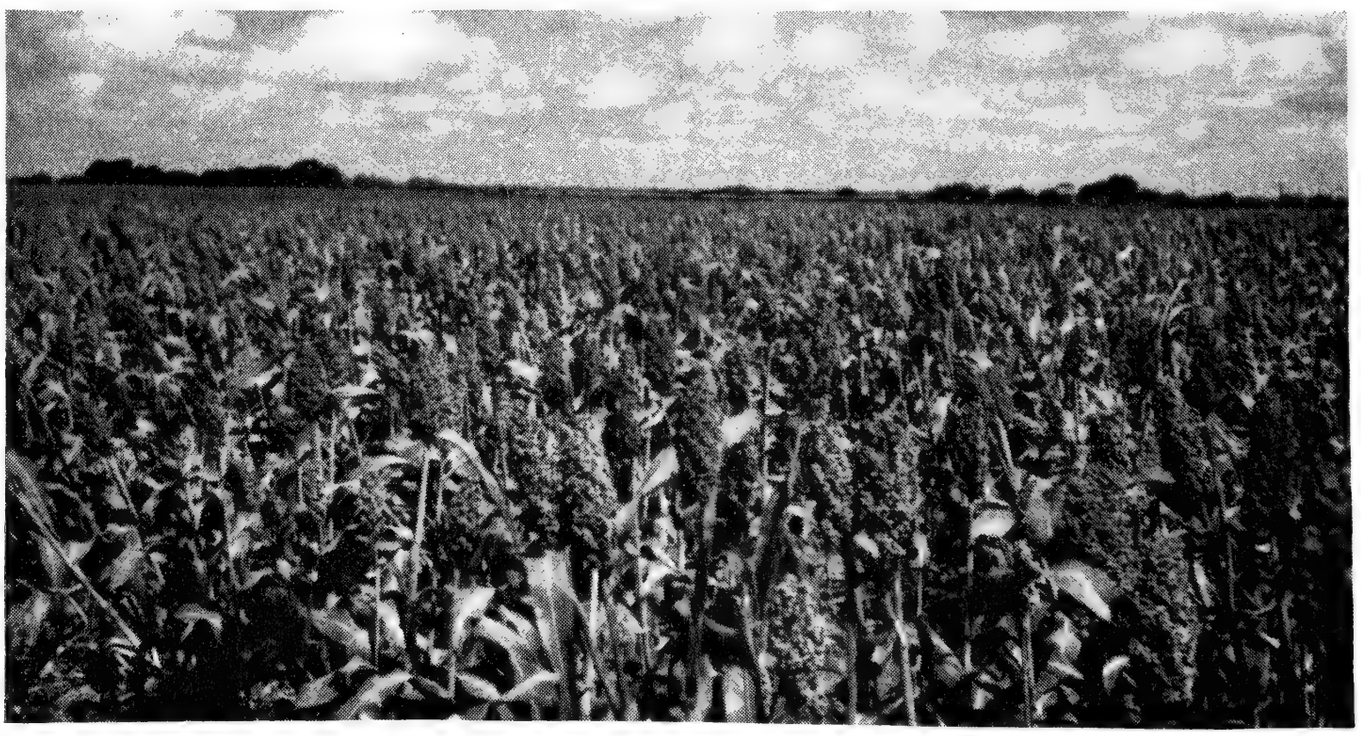
Introduced from the Sudan area of Africa by the U. S. Department of Agriculture in 1908, now the most popular grain and forage sorghum because of its many uses, wide adaptability, profuse tillering (stooling) habit, and its long planting season. Quite sensitive to soil and moisture, therefore best adapted on well worked loam soils. Produces high yields of forage and grain used as bundle feed, green or dry ensilage, and as a grain crop. The seed finds a ready sale on the market. Plants leafy, stems somewhat slender and subject to lodging, juicy and slightly sweet, brittle when mature. Seedheads erect, seed small to mid-size, bluish-white, somewhat soft; shatters easily.

| | | |
|---|---|---|
| **SHALLU (Egyptian Wheat)** | 130 | 6-8 |

Introduced from India about 1890 by the Louisiana Agricultural Experiment Station, highly prized as a feed for poultry and sown quite extensively for game birds. Plants leafy, tiller freely and though of limited forage value are resistant to leaf diseases and well adapted to regions of high humidity. Seedheads large and plume-like; seed creamy white, brittle but not hard, with very high protein content. Shatters freely at maturity, an advantage when grown as shade for poultry and game birds, which scratch and feed on the fallen seeds.

| | | |
|---|---|---|
| **SCHROCK KAFIR (Sagrain)** | 120 | 4-5½ |

A chance field cross, similar to Darso, discovered at Enid, Oklahoma, in 1912. Produces consistently high yields of grain and forage. Adapted to very heavy clay soils in regions of high humidity. May be planted early or late; resistant to lodging and to bird damage. Grown as bundle feed, often as ensilage, and will stand for combine harvest. Stems stout, juicy, very leafy; leaves very broad. Seedheads not so large as Darso; seed brownish, waxy, non-shattering.



**Schrock Kafir (Sagrain): for high yields of grain and forage**

| | Days to Maturity | Height in Feet |
|---|---|---|
| **SPUR FETERITA** | 100 | 5-7 |

An improved variety developed from Feterita, which was introduced about 40 years ago from Egypt where it is used as human food. A dry climate, high yielding grain variety, immune to smut and resistant to insect damage. Produces a high average yield of grain on a comparatively small supply of moisture; occasionally used as a late crop after oats. Stalks stout, seedheads erect, less compact than those of the milos, seed very large, soft, chalky, bluish-white, very sensitive to low soil temperature; high in protein and may be fed without grinding.

| | | |
|---|---|---|
| **TEXAS BLACKHULL KAFIR** | 105 | 5-6 |

One of the white seed varieties, which command higher prices on the grain market. An early, uniform-maturing, drought and insect resisting selection from original standard Blackhull Kafir, developed by the Texas Agricultural Experiment Station and distributed in 1924. Very popular for its wide adaptability and high yields of grain and forage. Used for bundle and dry ground feed. Stems leafy, somewhat stout, resistant to lodging, slightly juicy but not sweet; seedheads erect, long, compact; seed of medium size, white, not hard but somewhat brittle; of very high feed value.

Texas Blackhull Kafir: a popular white-seeded variety

| | Days to Maturity | Height in Feet |
|---|---|---|

# SWEET SORGHUMS
## FOR HAY AND ENSILAGE

**ATLAS SORGO** ..... 125 6-8

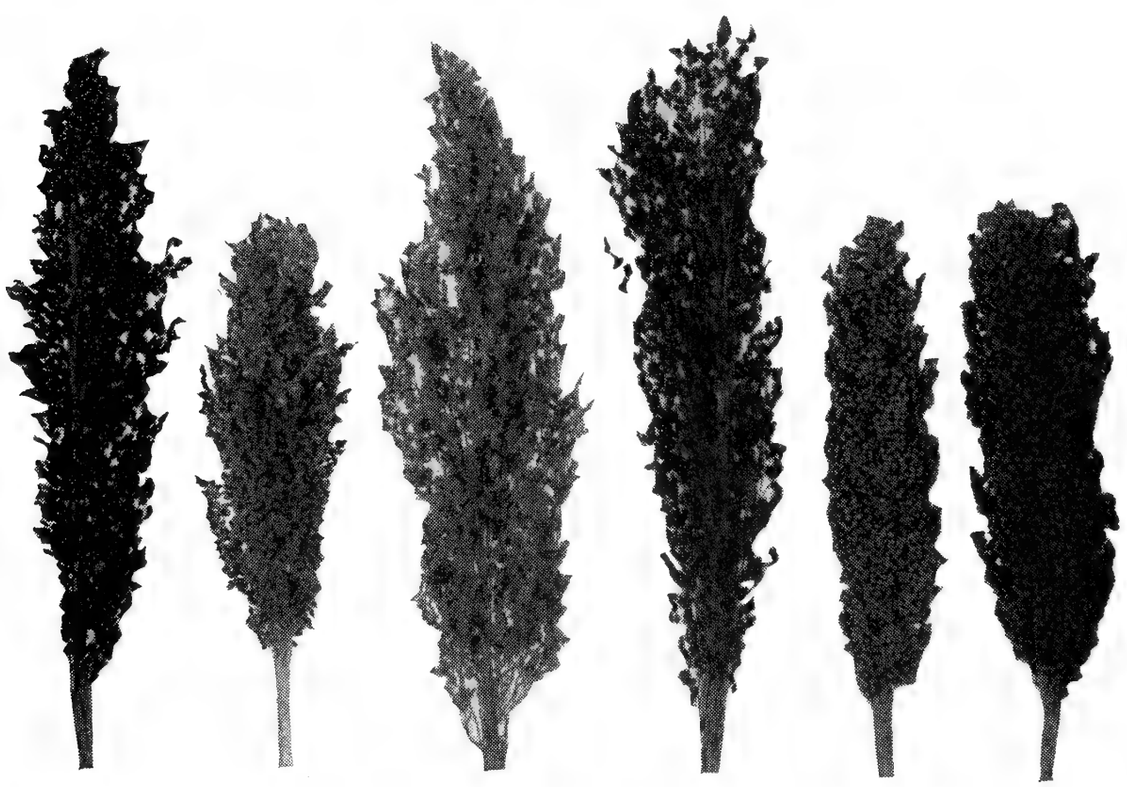
The result of a cross between Blackhull Kafir and Sourless sorgo made by I. N. Farr, a farmer of Stockton, Kansas, about 1923 and developed by the Kansas Agricultural Experiment Station. Well adapted to dry land and irrigation for very early or late planting and yields a good hay when planted very thick. The white seeds are smaller than Kafir and have a ready sale on the grain market. Stems stout, resistant to lodging, juicy, sweet, tiller freely, very leafy. Seedheads not so long as Kafir, less compact but non-shattering; seed white, small, with high feed value.

**BLACK AMBER (Chinese)** ..... 95 5-7

The only sweet sorghum yet introduced from China, first grown in the United States about 1853. Sown on the lighter soils in all the sorghum sections, this variety is more typical of several local strains which are seldom uniform in seedhead characteristics. A popular variety, chiefly because of very early maturity, and being resistant to leaf diseases. Not high yielding but well adapted to grow in combination with soybeans, cowpeas, and sudan for hay or silage. Not very leafy but has high sugar content. Some prefer it for the light colored syrup of distinct flavor.

**ORANGE SORGO** ..... 105 5-6

Exact origin unknown, but typical of many strains grown locally, some of which were introduced from Africa. Produces high yields of sweet, juicy hay and ensilage. Grows best on lighter soils and is somewhat drought resistant. May be used for syrup.



Black Amber Orange Shallu Honey Drip Atlas Schrock

Feterita | Martin | Blackhull Kafir | Hegari | Sumac | Darso

| | Days to Maturity | Height in Feet |
|---|---|---|
| **SOURLESS SORGO (African Millet)** | 113 | 5-6 |

Probably a descendant of a variety imported from Africa about 1857. Similar to the group known as Orange except for its white seed and the ability of the fodder to keep for a long time without souring. Fairly widely distributed and is recommended for its excellent yield of high quality fodder. Resistant to sorghum red spot and retains its lower leaves even in severe drought.

## SUMAC

| | | |
|---|---|---|
| **SUMAC, MEDIUM DWARF BLACKHULL (Cane)** | 125 | 5-7 |

A very leafy, disease-resistant strain adapted to south Texas, developed and introduced by B. V. Hasselfield of Tivoli, Texas, in 1931-32. Produces high tonnage for hay or silage either broadcast or row planted; preferred in south Texas where all feed is row planted and harvested with the row binder. Seedheads short, compact, very uniform, seed medium in size, dark red.

| | | |
|---|---|---|
| **SUMAC, REDHULL (Medium Dwarf Cane)** | 125 | 5-7 |

A strain developed by head to row selection in 1929 at Tivoli, Texas, and grown quite extensively in south Texas. Yields a very high grade bright hay; of high sugar content, uniformly maturing plants with slender stems, tiller quite freely, seedheads small; seed small and reddish; hulls reddish. Adapted to southern Texas where hay sorghums are row planted.

| | | |
|---|---|---|
| **SUMAC (Red Top Cane)** | 125 | 6-8 |

A standard giant-growing variety long known for its high yields of extra quality hay and frequently turned under while green to enrich the soil. The most widely used of all the sorghums as a broadcast hay crop in heavy corn and cotton lands. Thick sowings are made early in the year to produce a heavy crop of very fine stems 3-4 ft. tall for the better curing of fine hay with excellent keeping qualities. Often planted for filling the silo, as green growth, or allowed to cure in bundles.

# SWEET SORGHUMS (Sorgo)

## FOR SYRUP

Seed of the syrup sorghums is produced chiefly along the northern limits of the cotton belt, where the season is likely to be too short for good yields of syrup but is suitable for the production of seed crops. In growing sorghum for syrup, particular attention must be given to the selection and preparation of the soil, to treating the seed against smut, and to the cultivation of the crop.

| | Days to Maturity | Height in Feet |
|---|---|---|
| **GOOSENECK** | 130 | 10-12 |

One of the best syrup varieties, introduced from Natal, Africa, by Mr. Leonard Wray in 1857. Adapted on rich, fertile soils. Relatively free from lodging and resistant to leaf blight. Sometimes used for silage. Plants coarse and stout, stems very juicy and sweet; matures more uniformly than other varieties and yields a clear bright product. Seedheads large, with erect or slightly recurved stem; seedhulls black to brownish; seed brownish and of medium size.

| | | |
|---|---|---|
| **HONEY SORGO** | 135 | 11-12 |

The most popular of the syrup sorghums, probably also introduced by Mr. Wray. Yields a high grade syrup but in South Texas is grown mostly for its very heavy yield of highly palatable ensilage, greatly relished by livestock. Plants stout and very tall, therefore somewhat subject to lodging, quite free stooling; leafy, juicy and sweet. Seedheads large, open and spreading; seed bright reddish-brown and shiny. Seed is sparsely produced and owing to the height of the stalks is difficult to handle. The continued popularity of Honey Sorgo shows, however, that its excellent qualities more than compensate for the slight extra cost necessarily involved in good seed of this desirable variety.

| | | |
|---|---|---|
| **SUGAR DRIP** | 120 | 8-10 |

A true syrup sorghum often confused with other locally grown strains. Not extensively grown, but widely adapted. Quite popular on account of its earliness, leafiness, and usefulness for ensilage and hay. Plants stout to slender, very juicy and sweet. Seedheads relatively small and erect; seed branches somewhat stiff. Seedhulls reddish, round, much exposed, resistant to shattering. Not so high yielding as the other varieties, but gives a well flavored product.

# FLAX

*Linum usitatissimum*

A very ancient fibre and oil crop in the old world but comparatively new in the Southwest, where it is grown for the seed, from which linseed oil is expressed, and the residue of meal. An annual, erect branching plant, best adapted to the cool moist periods of the fall and spring months, and following corn or other fibrous-rooted crops. Suited to loam soils which are well drained, fairly fertile, and well worked. The success of a flax crop depends very largely on the control of weeds which take moisture from the growing crop and interfere with harvesting. Flax seed is very sensitive to moisture conditions, therefore soil must be well worked to maintain a uniform distribution of surface moisture for good stands. Only seed of high germination and purity is deemed worthy of planting to compensate for the expense of land preparation necessary to control weed growth and conserve moisture.

**B-5128**

A new variety selected at the North Dakota Experiment Station from a cross of Golden x Rio. Resembles the Rio parent in having tall stiff straw, brown seeds and blue flowers. Resistant to rust and wilt, and mid-season to late in maturity.

### BISON

A standard variety; not so winter-hardy as Rio nor so rust-resistant; but yields a high percentage of oil. Probably better suited for spring planting. Plants of medium height, 26″-30″, wilt-resistant but susceptible to rust.

### DAKOTA

A new variety developed from a cross of Renew x Bison made by A. C. Dillman, at Bozeman, Montana in 1938. Highly resistant to wilt and rust; early to mid-season in maturity. The plants are medium height (20-26 inches); the seeds brown, of medium size; the flowers blue. Dakota is on the recommended list of flax varieties in all the North Central states and Canada. It will be tried in South Texas for the first time in 1947-48.

### GOLDEN

A rust-resistant and winter-hardy variety that has proven more widely adaptable through south Texas than other varieties.

### PUNJAB

A high yielding variety adapted to irrigated land in Rio Grande Valley and the Winter-garden section.

### RIO

A new disease resistant, winter-hardy variety adapted to the dryland farming sections of the Texas coast. Matures uniformly and has given the highest average yield of all varieties tested on the Texas Gulf Coast. Resistant to both wilt and rust. Plants 26″-36″ under irrigation, bolls large, seeds brown and slightly larger than Punjab or Bison. Mid-season in maturity, averaging 3 days later than Bison.

### ROYAL

A rust-resistant variety selected by J. B. Harrington at Saskatoon, Canada. Medium tall with stiff straw; mid-season to late in maturity. Seeds are brown with a yellow tip, providing a ready means of identification.

## RAPE

*Brassica napus*

### DWARF ESSEX

A cool weather, quick-growing green grazing crop. Furnishes abundant pasturage for hogs, sheep, and poultry in 4–6 weeks after sowing. Used also to plant with spring oats for grazing and green manure. Thrives best on well worked, moist and fertile loam soils. May be planted at intervals of every few weeks in the season to furnish new succulent grazing, or to harvest and feed green. Stock will fatten on it. The young, tender growth provides an agreeable vegetable dish for table use.

Though only the first season's growth is of value for grazing, the plant is a biennial, seed being produced in the second year.

## SUNFLOWER

*Helianthus annuus*

### MAMMOTH RUSSIAN

A warm weather crop grown for its seed, high in protein and oil content. Highly valued for poultry and bird food. Huge flower heads, often 10-12 inches in diameter; seed large, striped white and black. Mature heads often thrown to poultry for feeding. Well adapted on loam soils of the corn and sorghum type.

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## GRASSES



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## SORGHUMS



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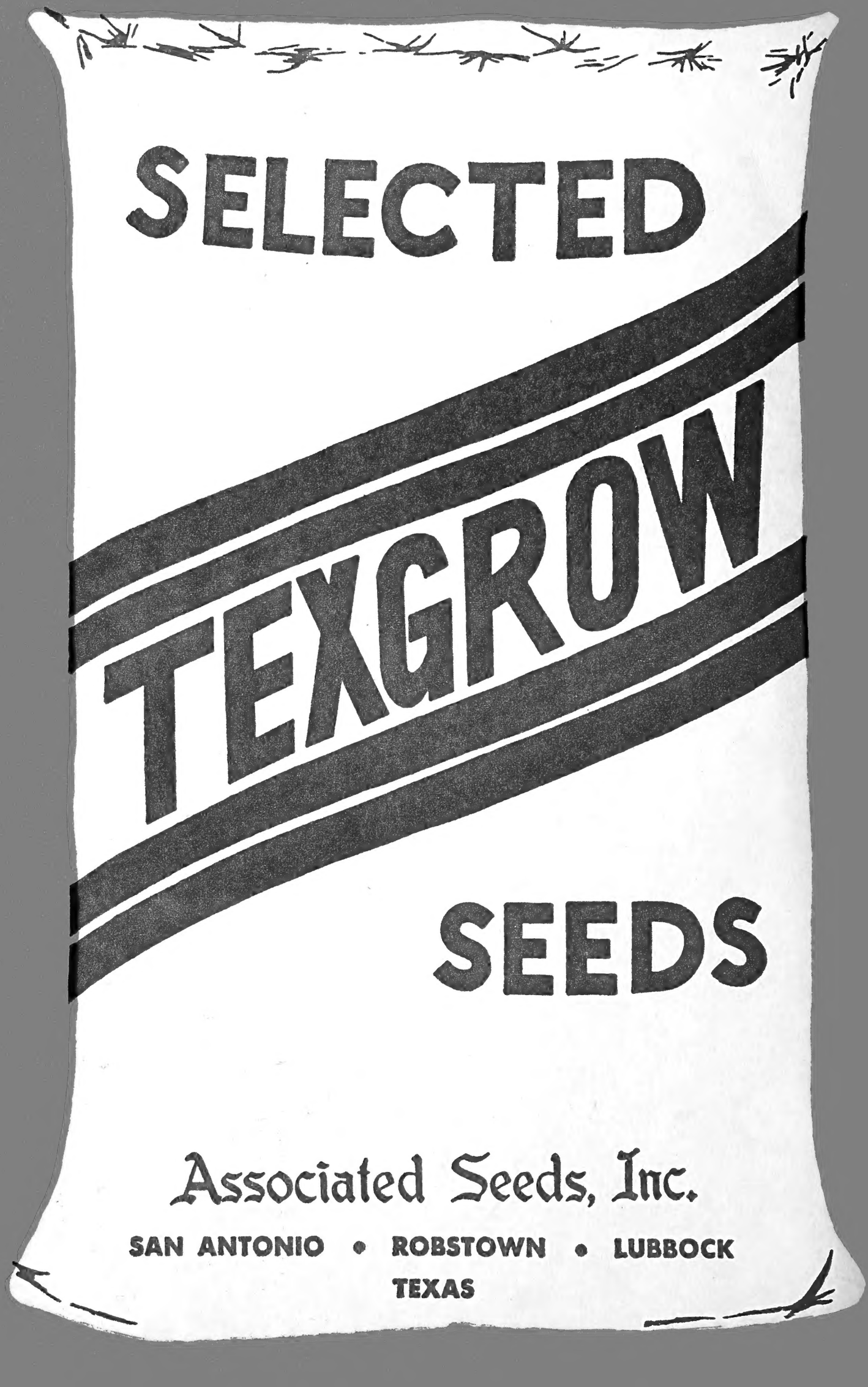
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